SHB111
Intel® QM57 PCH with Intel® Core™ i7 / i5 / i3 Processor / Intel® Celeron® Processor
PICMG 1.3 Industrial Motheroard
User's Manual

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ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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CHAPTER 1
INTRODUCTION

The **SHB111** PICMG 1.3 full-size Single Board Computer supports **rPGA988** socket for **Intel® Core™ i7 Mobile Processor, Intel® Core™ i5 Mobile Processor and Intel® Core™ i3 Mobile Processor** and **Intel® Celeron® Processor** with 32nm technology and Transfer Rate **800/1066 MHz**. The board integrates Intel® **QM57** chipset that delivers outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are two 240-pin DDR3 DIMM sockets for dual channel **DDR3 800/1066**, maximum memory capacity up to **8GB(Assuming Dual Channel Mode with two x8 double sided unbuffered, non-ECC DIMM memory configuration)**. The board also features dual Gigabit Ethernet, six serial ATA ports at maximum transfer rate up to 3Gbs, and SATA RAID 0/1/5/10 by PCH. **Foreteen USB 2.0** high speed compliant ports and built-in Intel® HD Audio Digital Header can achieve the best stability and reliability for industrial applications.

1.1 Specifications

CPU

- **Intel® Core™ i7 Mobile Processor,**
- **Intel® Core™ i5 Mobile Processor**
- **Intel® Core™ i3 Mobile Processor**
- **Intel® Celeron® Processor**

- **System Chipset**
  - **Intel® QM57**
- **CPU Socket**
  - **rPGA988 Socket**
- **DRAM Transfer Rate**
  - **800/1066 MHz**
- **BIOS**
  - AMI EFI BIOS via SPI interface with socket
- **System Memory**
  - Two 240-pin DDR3 DIMM sockets
  - Maximum up to 8GB DDR3 memory
  - Supports DDR3 800/1066 memory
- **L1, L2, L3 Cache:** integrated in CPU
- **Onboard Multi-I/O**
  - Parallel Port: one 26-pin 2.54-pitch box-header, SPP/EPP/ECP supported
  - Serial Port: one for RS-232 with 10-pin, 2.54-pitch box-header (COM1) and one port for RS-232/422/485 with 10-pin, 2.54-pitch box-header (COM2)
  - Floppy controller: one 34-pin, 2.54-pitch box-header supports two drives (1.44MB for each)
- **USB Interface**
  - Ten USB ports compliant with USB Spec. Rev. 2.0 (Ten ports on SHB111, Four ports to SHB connector-C golden fingers)

- **Onboard Graphics**
  - Intel® Arrandale integrated Graphics Processing Unit (GPU) processors which goes with Intel® QM57 chipset with LVDS, VGA, DisplayPort (co-lay woth VGA).
  - Memory Size -- Intel® DVMT supported
  - Resolution -- VGA output up to a resolution of 2048x1536 pixels with 32-bit color at 75 Hz, DisplayPort output up to 2560x 1600 at 60 Hz and LVDS output up to 1600x 1200 at 60 Hz.
  - Output Interface -- VGA from DAC output via 15-pin D-Sub connector and DisplayPort from DAC output via DisplayPort connector co-lay with D-Sub connector.LVDS from DAC output via 40-pin connector.
- **Ethernet**
  - The LAN1/LAN2 are WG82577LM/WG82583V Ethernet controller support 10/100/1000 Mb/s
  - Dual LAN via PCI-Express x1
- **Serial ATA**
  - Support Serial ATA/Serial ATA II
  - Six Serial ATA-II ports, 3GB/s performance and SATA RAID 0/1/5/10 by QM57
- **Compact Flash Socket**
  - One Compact Flash® Type II Socke
- **Audio**
  - 10-pin 2.54 pin-header (Intel® HD Audio Digital Header)
  - Hardware Monitoring
  - Monitoring temperatures, voltages, and cooling fan status
- **Watchdog Timer**
  - Reset Supported (1-255 level)
- **Dimensions**
  - 338mm x 126mm

NOTE *All specifications and images are subject to change without notice.*

1.2 Utilities Supported

- Intel® Chipset Drivers
- Intel® Graphics Drivers
- Ethernet Utility and Drivers
- HD Audio Drivers
- RAID Utility
- iAMT Utility and Drivers
- TPM Utility

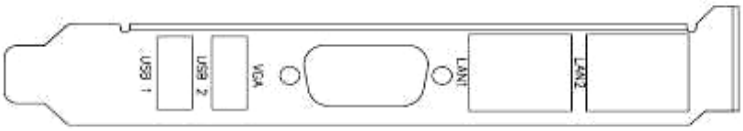
NOTE

By the limitation of QM57, the PCIe x4 slot and the PCIe x1 slot can't work at the same time with the same BIOS version.
Therefore, 2 BIOS versions are required to be applied as following configurations:

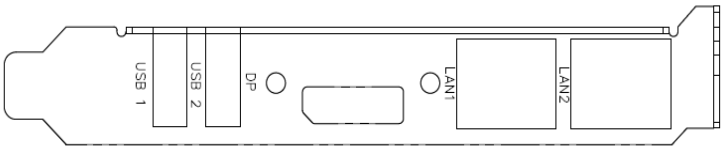
- Type A: BIOS set as PCIe x4 enabled (the default one). The PCIe x 4 enabled; Device usage: For one PCIe x4 device or one PCIe x1 device plugged in PCIe x4 slot.

- Type B: BIOS set as PCIe x1 enabled. Device usage: Four PCIe x1 devices in PCIe x1 slot.
  To get this BIOS by
  http://www.axiomtek.com/support/download.asp

1.3 I/O Bracket



I/O Bracket for VGA Output

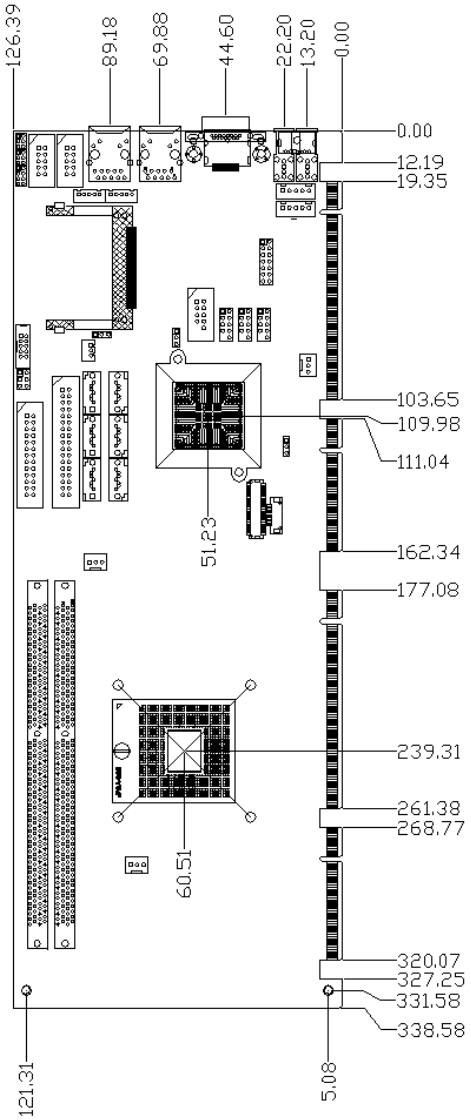


I/O Bracket for DisplayPort Output

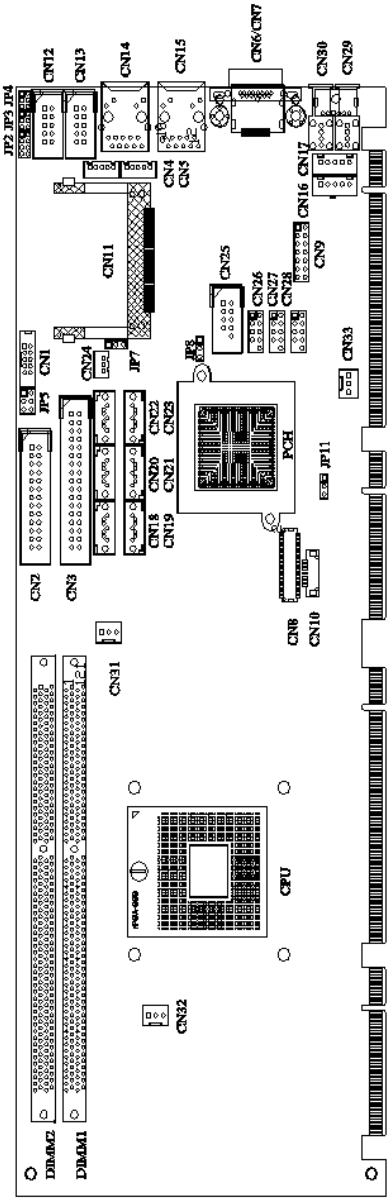
CHAPTER 2

JUMPERS AND CONNECTORS

2.1 Board Dimensions



2.2 Board Layout



2.3 Jumper Settings

Proper jumper settings configure the **SHB111** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

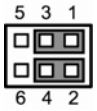
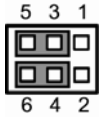
Jumper	Default Setting	Jumper Setting
JP2	COM2 Mode Selection : RS-232	Short 1-2
JP3	COM2 Mode Selection : RS-232	Short 3-5 , 4-6
JP4	COM2 Mode Selection : RS-232	Short 3-5 , 4-6
JP5	Audio Amplifier Selection : Disable	Short 1-3 , 2-4
JP7	CF Voltage Selection: 3.3V	Short 1-2
JP8	Clear ME Setting : Normal	Short 1-2
JP11	LVDS Voltage selection : 3.3V	Short 1-2

COM2 Mode Selection for RS-232/422/485 (JP2, JP3, JP4)

These jumpers select the COM2 port communication mode to operate RS-232 or RS-422/485.

Description	Function	Jumper Setting		
COM2(CN13)	RS-232 (Default)	JP2 7 5 3 1 8 6 4 2	JP3 5 3 1 6 4 2	JP4 5 3 1 6 4 2
	RS-422	JP2 7 5 3 1 8 6 4 2	JP3 5 3 1 6 4 2	JP4 5 3 1 6 4 2
	RS-485	JP2 7 5 3 1 8 6 4 2	JP3 5 3 1 6 4 2	JP4 5 3 1 6 4 2

Audio Amplifier Selection (JP5)

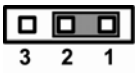
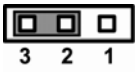
Description	Function	Jumper Setting
Audio Amplifier	Disable (Default)	
	Enable	

CF Voltage Selection (JP7)

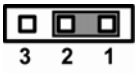
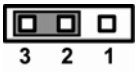
Description	Function	Jumper Setting
CF Power	3.3V (Default)	
	5V	

Clear ME Setting (JP8)

You may need to use this jumper is to clear the ME setting if incorrect BIOS settings.

Description	Function	Jumper Setting
ME Clear	Normal (Default)	
	Clear ME	

LVDS Voltage Selection (JP11)

Description	Function	Jumper Setting
LVDS Voltage Selection	3.3V (Default)	
	5V	

2.4 Connectors

Connectors connect this board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected.

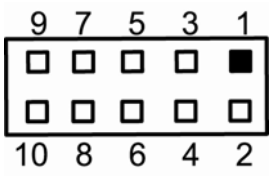
Here is a summary table shows you all connectors on the board.

Connector	Label	Connector	Label
HD Audio Connector	CN1	SATA0 Connector	CN18
Printer Connector	CN2	SATA1 Connector	CN19
Floppy Connector	CN3	SATA2 Connector	CN20
LAN2 External LED Connector	CN4	SATA3 Connector	CN21
LAN1 External LED Connector	CN5	SATA4 Connector	CN22
VGA Connecter	CN6	SATA5 Connector	CN23
DisplayPort Connector (BOM Option)	CN7	SMBUS Connector	CN24
LVDS Connector	CN8	USB Port 2, 3 Connector	CN25
Front Panel Connector	CN9	USB Port 4, 5 Connector	CN26
LVDS Inverter Connector	CN10	USB Port 6, 7 Connector	CN27
CF Connector	CN11	USB Port 8, 9 Connector	CN28
COM1 Connector	CN12	USB Port 0 Connector	CN29
COM2 Connector	CN13	USB Port 1 Connector	CN30
LAN1 Output Port	CN14	Auxiliary FAN	CN31
LAN2 Output Port	CN15	CPU FAN	CN32
Keyboard Connector	CN16	SYSTEM FAN	CN33
Mouse Connector	CN17	DDRIII CHA DIMM0	DIMM1
		DDRIII CHB DIMM0	DIMM2

HD Audio Connector (CN1)

CN1 is a 10pin-header connector commonly used for the audio.

Pin	Signal	Pin	Signal
1	MIC-IN	2	GND
3	Line In L	4	GND
5	Line In R	6	GND
7	Audio Out L	8	GND
9	Audio Out R	10	GND



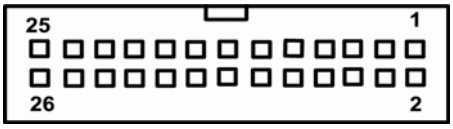
Printer Connector (CN2)

This board has a multi-mode parallel port to support:

1. **Standard Mode:**
   IBM PC/XT, PC/AT and PS/2™ are compatible with bi-directional parallel port.
2. **Enhanced Mode:**
   Enhance parallel port (EPP) is compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant).
3. **High Speed Mode:**
   Microsoft and Hewlett Packard extended capabilities port (ECP) is IEEE 1284 compliant.

Pin	Signal	Pin	Signal
1	Strobe#	2	Auto Form Feed#
3	Data 0	4	Error#
5	Data 1	6	Initialize#
7	Data 2	8	Printer Select In#
9	Data 3	10	GND
11	Data 4	12	GND
13	Data 5	14	GND

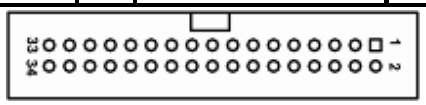
Pin	Signal	Pin	Signal
15	Data 6	16	GND
17	Data 7	18	GND
19	Acknowledge#	20	GND
21	Busy	22	GND
23	Paper Empty#	24	GND
25	Printer Select	26	GND



Floppy Connector (CN3)

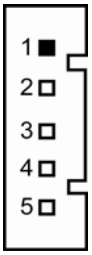
The board provides a 34-pin header type connector, **CN3**, supporting up to two floppy drives. The floppy drives may be any one of the following types: 5.25" 360KB/1.2MB and 3.5" 720KB/1.44MB/2.88MB.

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	Drive Density Select	3	GND
4	No connector	5	GND	6	No connector
7	GND	8	Index#	9	GND
10	Motor enable A#	11	GND	12	No connector
13	GND	14	Drive select A#	15	GND
16	No connector	17	GND	18	Direction#
19	GND	20	STEP#	21	GND
22	Write data#	23	GND	24	Write gate#
25	GND	26	Track 0 #	27	GND
28	Write protect#	29	No connector	30	Read data#
31	GND	32	Head selection#	33	No connector
34	Disk change#				



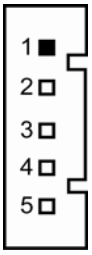
LAN2 External LED Connector (CN4)

Pin	Signal
1	+ 3.3V_SBY
2	LINK_ACT
3	100, Low Active
4	+ 3.3V_SBY
5	1000, Low Active



LAN1 External LED Connector (CN5)

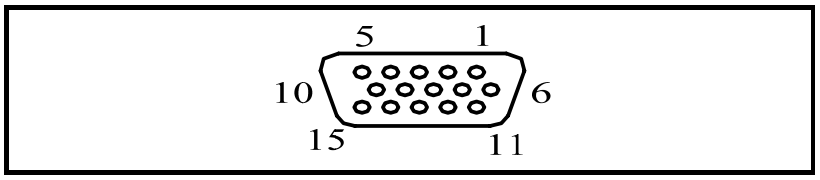
Pin	Signal
1	+ 3.3V_SBY
2	LINK_ACT
3	100, Low Active
4	+ 3.3V_SBY
5	1000, Low Active



VGA Connector (CN6)

CN6 is a DB15 connector commonly used for the CRT Monitor.

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	NC	5	GND	6	DETECT
7	GND	8	GND	9	VCC
10	GND	11	NC	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK

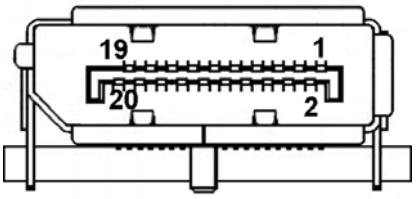


DisplayPort Connector (CN7)

CN7 is a Standard Display Port Connector co-layout with CN6.

Pin	Signal
1	DPB_LANE0
2	GND
3	DPB_LANE0#
4	DPB_LANE1
5	GND
6	DPB_LANE1#
7	DPB_LANE2
8	GND
9	DPB_LANE2#
10	DPB_LANE3
11	GND
12	DPB_LANE3#
13	GND
14	GND
15	DPB_AUX
16	GND
17	DPB_AUX#
18	DPB_HPDE
19	N.C.
20	3.3V

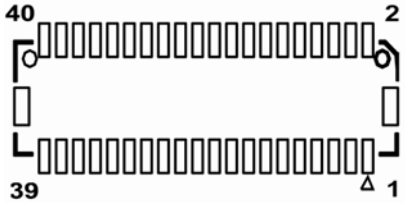
CN7



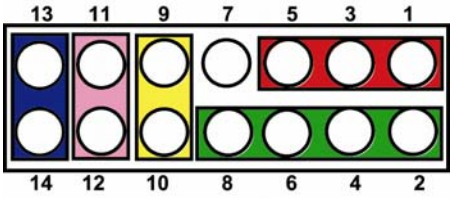
LVDS Connector (CN8)

CN8 is JST 40pin connector for the LVDS flat panel.

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C.	8	N.C.
9	GND	10	GND
11	Channel B D3-	12	Channel B D0-
13	Channel B D3+	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND



Front Panel Connector (CN9)



- **Power LED**

  This 3-pin connector denoted as Pin 1 and Pin 5 connects the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 5 as -. The Power LED lights up when the system is powered ON. Pin 3 is defined as GND.

- **External Speaker and Internal Buzzer Connector**

  Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 2 (-).

- **ATX Power On/Off Button**

  This 2-pin connector denoted as Pin 9 and 10 connects the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

- **System Reset Switch**

  Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer instead of turning OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

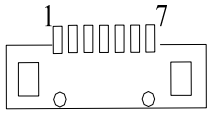
- **HDD Activity LED**

  This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

LVDS Inverter Connector (CN10)

The 7-pin inverter connector on the SHB111 is with Hirose connector. The matching connector is strongly recommended to use Hirose DF13-7S-1.25C.

Pin	Signal
1	12V
2	12V
3	5V
4	ENABLE
5	GND
6	GND
7	GND

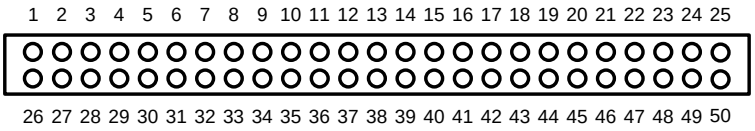


CF Connector (CN11)

The board is equipped with a CompactFlash™ disk socket on the solder side to support an IDE2 interface CompactFlash™ disk card. The socket is especially designed to avoid incorrect installation of the CompactFlash™ disk card. When installing or removing the CompactFlash™ disk card, please make sure the system power is off. The CompactFlash™ disk card is defaulted as the C: or D: disk drive in your PC system.

Pin	Signal	Pin	Signal
1	GND	26	CD1-
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	CS0#	32	CS1#
8	Address 10	33	VS1#
9	ATASEL	34	IORD#
10	Address 9	35	IOWR#
11	Address 8	36	WE#
12	Address 7	37	INTR
13	VCC	38	VCC

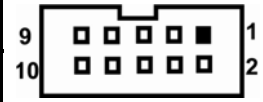
14	Address 6	39	CSEL#
Pin	**Signal**	**Pin**	**Signal**
15	Address 5	40	VS2#
16	Address 4	41	RESET#
17	Address 3	42	IORDY#
18	Address 2	43	DMAREQ
19	Address 1	44	DMAACK-
20	Address 0	45	DASP#
21	Data 0	46	PDIAG#
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16#	49	Data 10
25	CD2#	50	GND



COM1/2 Connetor (CN12/CN13)

The serial interface for the board consists of COM1 port supports RS232 and COM2 supports RS232/422/485.

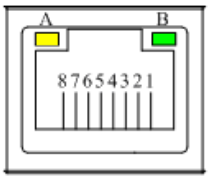
Pin	Signal	Pin	Signal
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	GND	10	NC



LAN Output Ports (CN14/CN15)

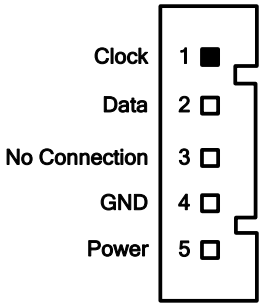
The RJ-45 connector LAN1/LAN2 is for Ethernet. To connect the board to 100-Base-T or 1000-Base-T hub, just plug one end of the cable into LAN1 or LAN2, and then, connect the other end (phone jack) to a 100-Base-T hub or 1000-Base-T hub.

Pin	Signal
1	Tx+ (Data transmission positive)
2	Tx- (Data transmission negative)
3	Rx+(Data reception positive)
4	RJ-1(For 100 base T-Only)
5	RJ-1(For 100 base T-Only)
6	Rx- (Data reception negative)
7	RJ-1(For 100 base T-Only)
8	RJ-1(For 100 base T-Only)
A	Active LED
B	100/1000 LAN LED



External Keyboard/Mouse Connectors (CN16/CN17)

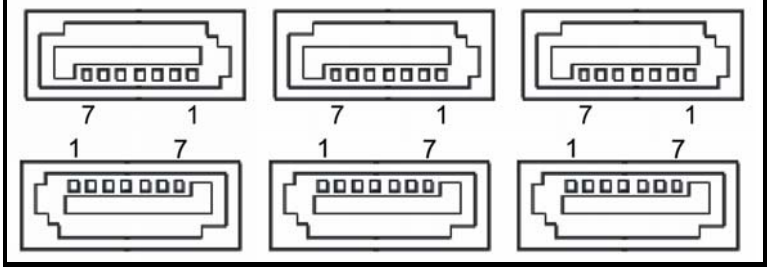
The board provides the Keyboard (CN16)/ Mouse (CN17) interface with a 5-pin connector.



SATA0~5 Connectors (CN18/CN19/CN20/CN21/CN22/CN23)

These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.

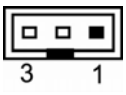
Pin	Signal	Pin	Signal
1	GND	2	SATA_TX+
3	SATA_TX-	4	GND
5	SATA_RX-	6	SATA_RX+
7	GND		



SMBUS Connector (CN24)

Connector SMBUS1 is for SMBUS interface support.

Pin	Signal
1	CLOCK
2	DATA
3	GND

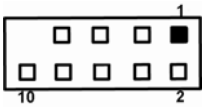


USB Connectors (CN25/CN26/CN27/CN28)

The 10-pin standard Universal Serial Bus (USB) connectors, **CN25/CN26/CN27/CN28**, on this board are for installing versatile USB interface peripherals.

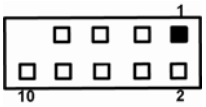
Pin	Signal	Pin	Signal
1	USB Power	2	USB Power
3	USB2-	4	USB3-
5	USB2+	6	USB3+
7	GND	8	GND
9	GND	10	GND

CN25



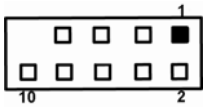
Pin	Signal	Pin	Signal
1	USB Power	2	USB Power
3	USB4-	4	USB5-
5	USB4+	6	USB5+
7	GND	8	GND
9	GND	10	GND

CN26



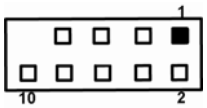
Pin	Signal	Pin	Signal
1	USB Power	2	USB Power
3	USB6-	4	USB7-
5	USB6+	6	USB7+
7	GND	8	GND
9	GND	10	GND

CN27



Pin	Signal	Pin	Signal
1	USB Power	2	USB Power
3	USB8-	4	USB9-
5	USB8+	6	USB9+
7	GND	8	GND
9	GND	10	GND

CN28



USB Connectors (CN29/CN30)

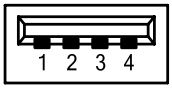
The **SHB111 Series** features Universal Serial Bus (USB) connectors, compliant with USB 2.0 (480Mbps) that can be adapted to any USB peripherals, such as monitor, keyboard and mouse.

Pin	Signal
1	USB POWER
2	USB0-
3	USB0+
4	GND

CN29

Pin	Signal
1	USB POWER
2	USB1-
3	USB1+
4	GND

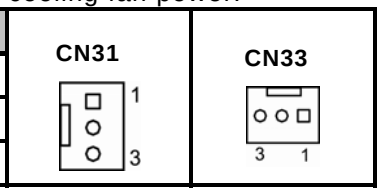
CN30



Auxiliary & System Fan Connectors (CN31/CN33)

You can connect the system cooling fan cable to **CN31/CN33** for system cooling fan power.

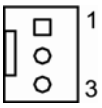
Pin	Signal
1	GND
2	+12V
3	Sensor



CPU Fan Connector (CN32)

A CPU fan is always needed for cooling CPU heat. The CPU fan connector **CN32** provides power to the CPU fan.

Pin	Signal
1	GND
2	+12V
3	Sensor



CHAPTER 3

HARDWARE DESCRIPTION

3.1 Microprocessors

The **SHB111** Series supports Intel® Core™i7 / Core™i5 / Core™i3 / Celeron® processors, which make your system operated under Windows® XP, Windows® Vista, Windows® 7and Linux environments. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

3.2 BIOS

The **SHB111** Series uses AMI Plug and Play BIOS with a single 64Mbit SPI Flash.

3.3 System Memory

The **SHB111** Series supports four 240-pin DDR3 DIMM sockets for a maximum memory of 8GB DDR3 SDRAMs. The memory module can come in sizes of 1GB, 2GB and 4GB.

3.4 I/O Port Address Map

The Intel® Core™i7 / Core™i5 / Core™i3 / Celeron® processors can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

[00000000 - 0000000F] Direct memory access controller
[00000000 - 00000CF7] PCI bus
[00000010 - 0000001F] Motherboard resources
[00000020 - 00000021] Programmable interrupt controller
[00000022 - 0000003F] Motherboard resources
[00000040 - 00000043] System timer
[00000044 - 0000005F] Motherboard resources
[00000060 - 00000060] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061] System speaker
[00000062 - 00000063] Motherboard resources
[00000064 - 00000064] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F] Motherboard resources
[00000070 - 00000071] System CMOS/real time clock
[00000072 - 0000007F] Motherboard resources
[00000080 - 00000080] Motherboard resources
[00000081 - 00000083] Direct memory access controller
[00000084 - 00000086] Motherboard resources
[00000087 - 00000087] Direct memory access controller
[00000088 - 00000088] Motherboard resources
[00000089 - 0000008B] Direct memory access controller
[0000008C - 0000008E] Motherboard resources
[0000008F - 0000008F] Direct memory access controller
[00000090 - 0000009F] Motherboard resources
[000000A0 - 000000A1] Programmable interrupt controller
[000000A2 - 000000BF] Motherboard resources
[000000C0 - 000000DF] Direct memory access controller
[000000E0 - 000000EF] Motherboard resources
[000000F0 - 000000FF] Numeric data processor
[00000170 - 00000177] Secondary IDE Channel
[000001F0 - 000001F7] Primary IDE Channel
[00000274 - 00000277] ISAPNP Read Data Port
[00000279 - 00000279] ISAPNP Read Data Port
[00000295 - 000002A4] Motherboard resources
[000002F8 - 000002FF] Communications Port (COM2)
[00000376 - 00000376] Secondary IDE Channel
[00000378 - 0000037F] Printer Port (LPT1)
[000003B0 - 000003BB] Intel(R) HD Graphics
[000003C0 - 000003DF] Intel(R) HD Graphics
[000003F0 - 000003F5] Standard floppy disk controller
[000003F6 - 000003F6] Primary IDE Channel
[000003F7 - 000003F7] Standard floppy disk controller
[000003F8 - 000003FF] Communications Port (COM1)

3.5 Interrupt Controller (IRQ) Map

The **SHB111** Series is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

IRQ	Parity check error
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	PCI Device Share
IRQ6	Floppy Disk Controller
IRQ7	Parallel port
IRQ8	Real time clock
IRQ9	ACPI Controller
IRQ10	PCI Device Share
IRQ11	PCI Device Share
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	SATA Primary (Legacy Mode)
IRQ15	SATA Secondary (Legacy Mode)

CHAPTER 4

AMI BIOS UTILITY

This chapter provides users with detailed description how to set up basic system configuration through the AMIBIOS8 BIOS setup utility.

4.1 Starting

To enter the setup screens, follow the steps below:

1. Turn on the computer and press the <F2> key immediately.
2. After you press the <F2> key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.

4.2 Navigation Keys

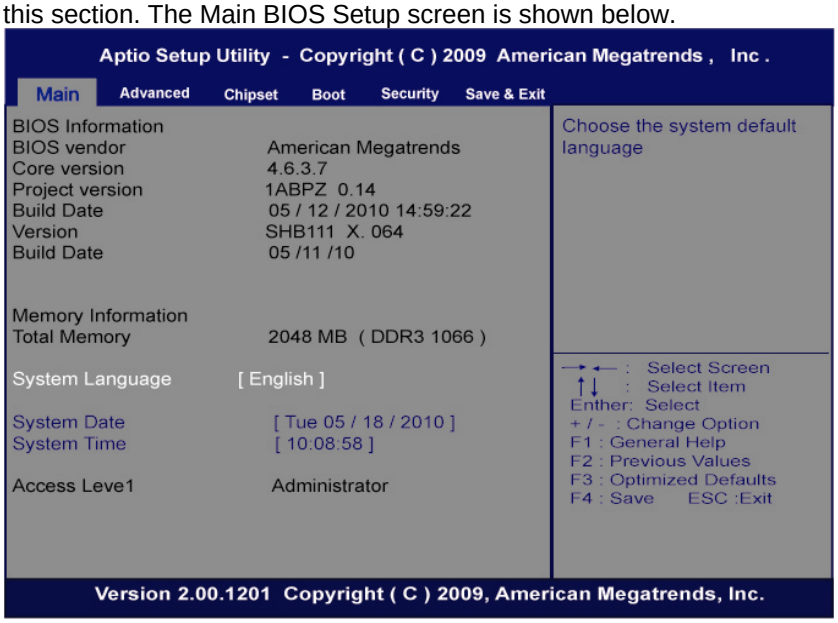
The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.
These keys include <F1>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.

NOTE **Some of navigation keys differ from one screen to another**.

← Left/Right	The Left <Arrow> keys allow you to select a setup screen.
↑↓ Up/Down	The Up and Down <Arrow> keys allow you to select a setup screen or sub-screen.
+– Plus/Minus	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item.
Tab	The <Tab> key allows you to select setup fields.
F1	The <F1> key allows you to display the General Help screen.
F2	The <F2> key allows you to Load Previous Values.
F3	The <F3> key allows you to Load Optimized Defaults.
F4	The <F4> key allows you to save any changes you have made and exit Setup. Press the <F4> key to save your changes.
Esc	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub-screens.

4.3 Main Menu

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Main
Advanced
Chipset
Boot
Security
Save & Exit
BIOS Information
BIOS vendor American Megatrends
Core version 4.6.3.7
Project version 1ABPZ 0.14
Build Date 05 / 12 / 2010 14:59:22
Version SHB111 X. 064
Build Date 05 /11 /10
Memory Information
Total Memory 2048 MB (DDR3 1066)
System Language [English]
System Date [Tue 05 / 18 / 2010]
System Time [10:08:58]
Access Leve1 Administrator
Choose the system default language
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

- **System Date/Time**
  Use this option to change the system date and time. Highlight *System Date* or *System Time* using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Enter> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

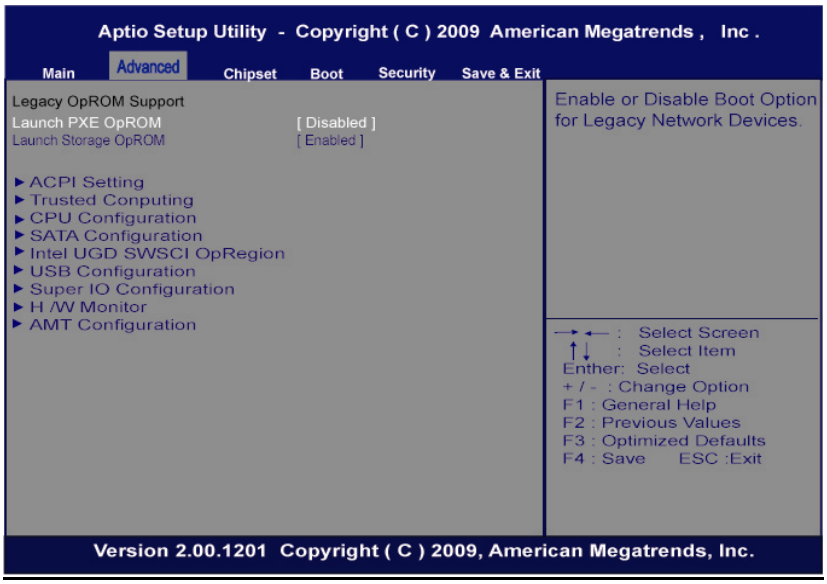
4.4 Advanced Menu

- **Launch PXE OpROM**
  Use this item to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up.
- **Launch Storage OpROM**
  This item can set enable or disable the storage device option ROM with CF device.

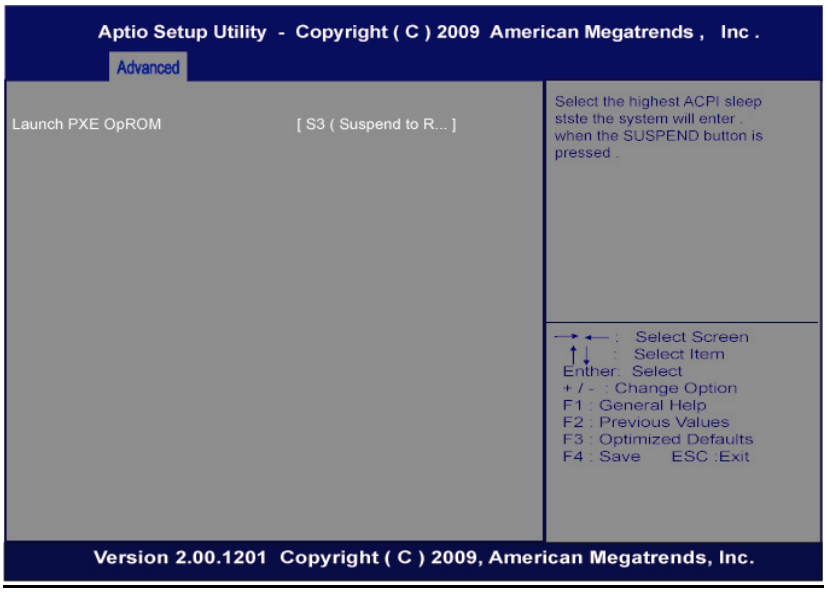
The Advanced menu also allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

- ACPI Settings
- Trusted Computing
- CPU Configuration
- SATA Configuration
- Intel IGD SWSCI OpRegion
- USB Configuration
- Super IO Configuration
- H/W Monitor
- AMT Configuration

For items marked with "►", please press <Enter> for more options.

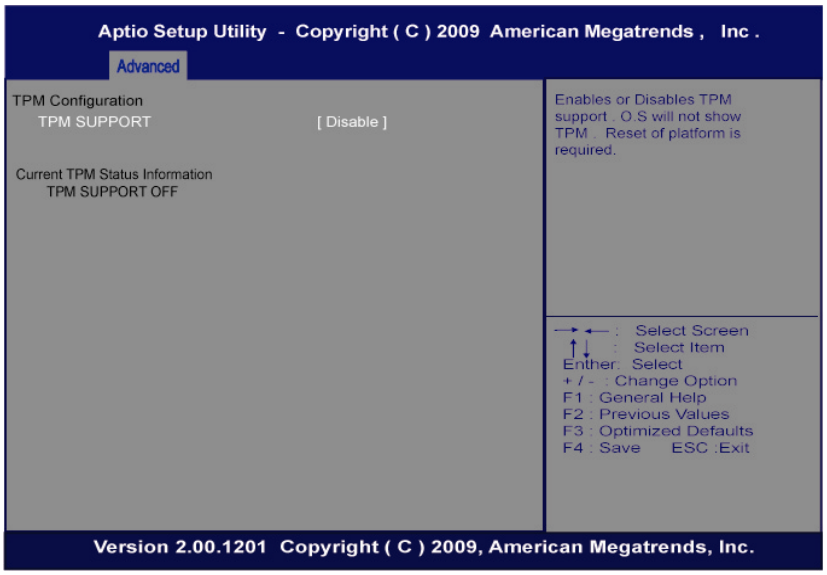

Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Main
Advanced
Chipset
Boot
Security
Save & Exit
Legacy OpROM Support
Launch PXE OpROM [Disabled]
Launch Storage OpROM [Enabled]
▶ ACPI Setting
▶ Trusted Computing
▶ CPU Configuration
▶ SATA Configuration
▶ Intel UGD SWSCI OpRegion
▶ USB Configuration
▶ Super IO Configuration
▶ H /W Monitor
▶ AMT Configuration
Enable or Disable Boot Option for Legacy Network Devices.
→← : Select Screen
↑↓ : Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

- **ACPI Settings**
  You can use this screen to select options for the ACPI Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
Launch PXE OpROM
[S3 (Suspend to R...]
Select the highest ACPI sleep stste the system will enter . when the SUSPEND button is pressed .
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

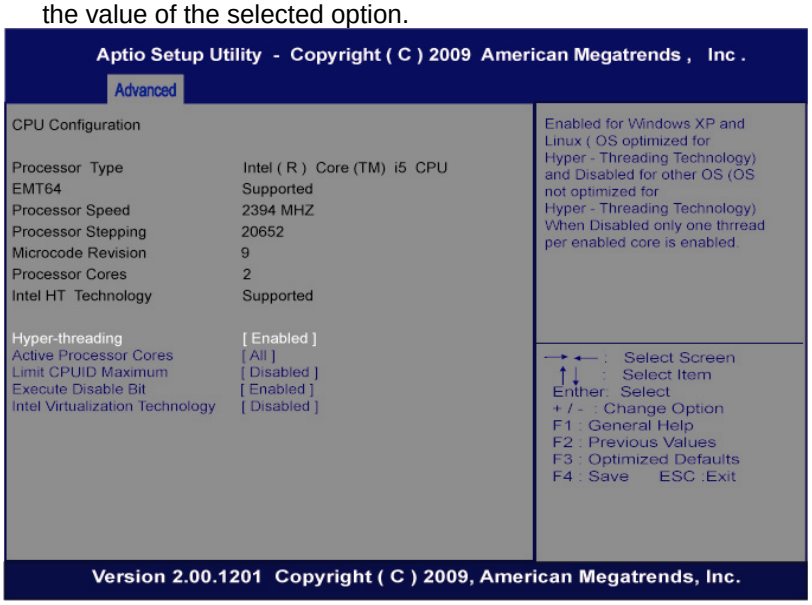
- **ACPI Sleep State**
  Allow you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend. Here are the options for your selection, *S1 (CPU Stop Clock), S3 (Suspend to RAM) and Suspend Disable*

- **Trusted Computing**
  You can use this screen to select options for the Trusted Computing, and change the value of the selected option. A description of the selected item appears on the right side of the screen.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
TPM Configuration
TPM SUPPORT [Disable]
Current TPM Status Information
TPM SUPPORT OFF
Enables or Disables TPM support . O.S will not show TPM . Reset of platform is required.
: Select Screen
: Select Item
Enter: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

  - **TPM SUPPORT**
    Use this item to control the Trusted Platform Module (TPM) function.

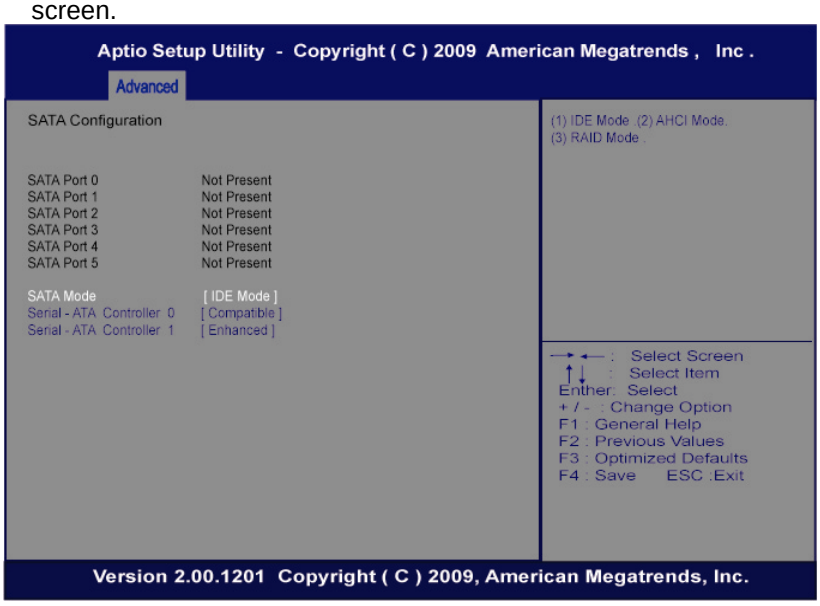
- **CPU Configuration**
  This screen shows the CPU Configuration, and you can change the value of the selected option.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
CPU Configuration
Processor Type
Intel (R) Core (TM) i5 CPU
EMT64
Supported
Processor Speed
2394 MHZ
Processor Stepping
20652
Microcode Revision
9
Processor Cores
2
Intel HT Technology
Supported
Hyper-threading
[Enabled]
Active Processor Cores
[All]
Limit CPUID Maximum
[Disabled]
Execute Disable Bit
[Enabled]
Intel Virtualization Technology
[Disabled]
Enabled for Windows XP and Linux (OS optimized for Hyper - Threading Technology) and Disabled for other OS (OS not optimized for Hyper - Threading Technology) When Disabled only one thrread per enabled core is enabled.
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

  - **Hyper-threading**
    This item can set enable or disable for support Hyper-threading Technology.
  - **Active Processor Cores**
    This feature controls the number of cores to enable in each processor package.
  - **Limit CPUID Maximum**
    You can enable this item to let legacy operating systems boot even without support for CPUs with extended CPU ID functions.
  - **Execute Disable Bit**
    This item helps you enable or disable the No-Execution Page Protection Technology.

- **Intel Virtualization Technology**
  Allows a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.

- **SATA Configuration**
  You can use this screen to select options for the SATA Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

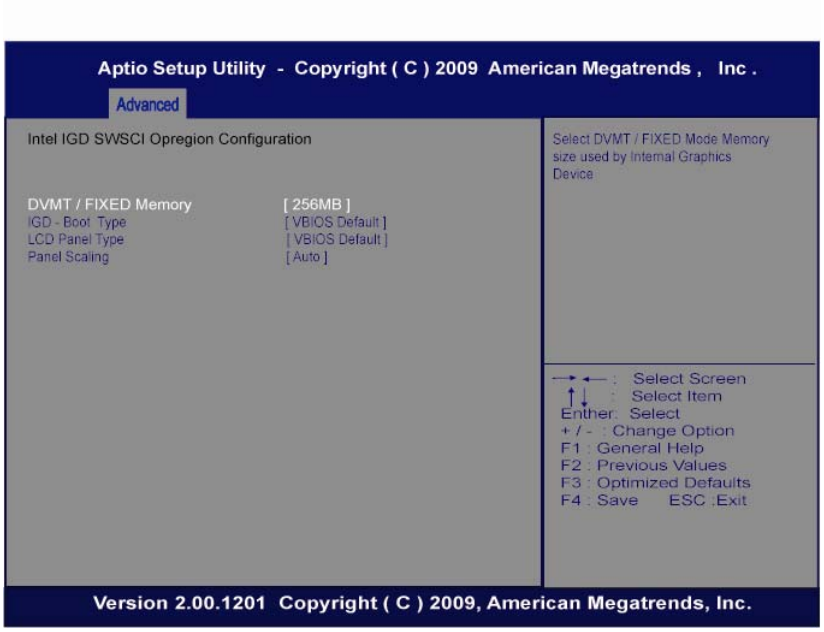

Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
SATA Configuration
SATA Port 0 Not Present
SATA Port 1 Not Present
SATA Port 2 Not Present
SATA Port 3 Not Present
SATA Port 4 Not Present
SATA Port 5 Not Present
SATA Mode [IDE Mode]
Serial - ATA Controller 0 [Compatible]
Serial - ATA Controller 1 [Enhanced]
(1) IDE Mode (2) AHCI Mode.
(3) RAID Mode .
: Select Screen
: Select Item
Enter: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

- **SATA Mode**
  Use this item to choose the SATA operation mode. Here are the options for your selection, *IDE Mode, AHCI Mode* and *RAID Mode*.

- **Serial-ATA Controller 0**
  Use this item to control the onboard SATA controller. Here are the options for your selection, *Compatible*, *Enhanced* and *Disable*.

- **Serial-ATA Controller 1**
  Use this item to control the onboard SATA controller. Here are the options for your selection, *Enhanced* and *Disabled*.

- **Intel IGD SWSCI OpRegion**
  The Intel IGD SWSCI OpRegion allows users to change the integrated graphic device settings.

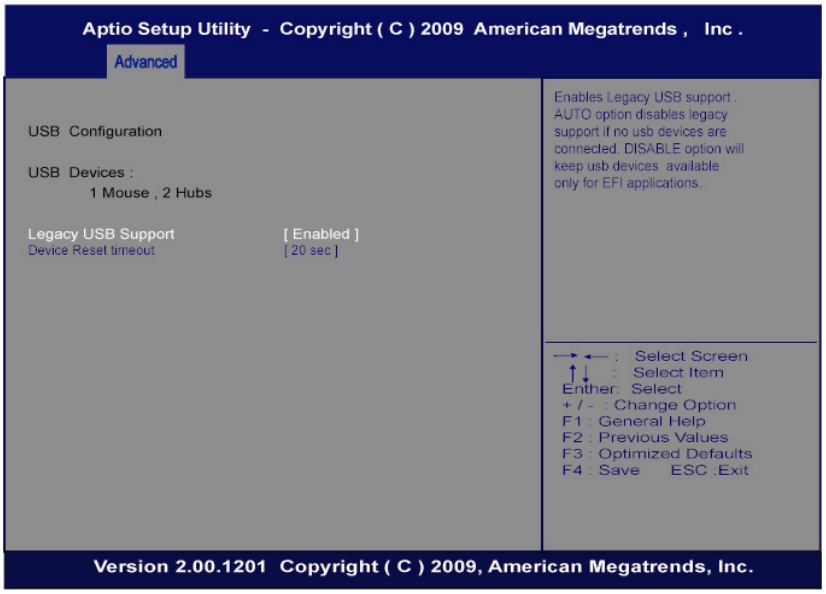

Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
Intel IGD SWSCI Opregion Configuration
DVMT / FIXED Memory [256MB]
IGD - Boot Type [VBIOS Default]
LCD Panel Type [VBIOS Default]
Panel Scaling [Auto]
Select DVMT / FIXED Mode Memory size used by Internal Graphics Device
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

- **DVMT/FIXED Memory**
  Allow you to allocate a fixed amount of system memory as graphics memory. Here are the options for your selection, *128MB, 256MB* and *Maximum DVMT*.

- **IGD-Boot Type**
  This item can select CRT and LCD which will be activated during POST. This function has no effect if external graphics present.

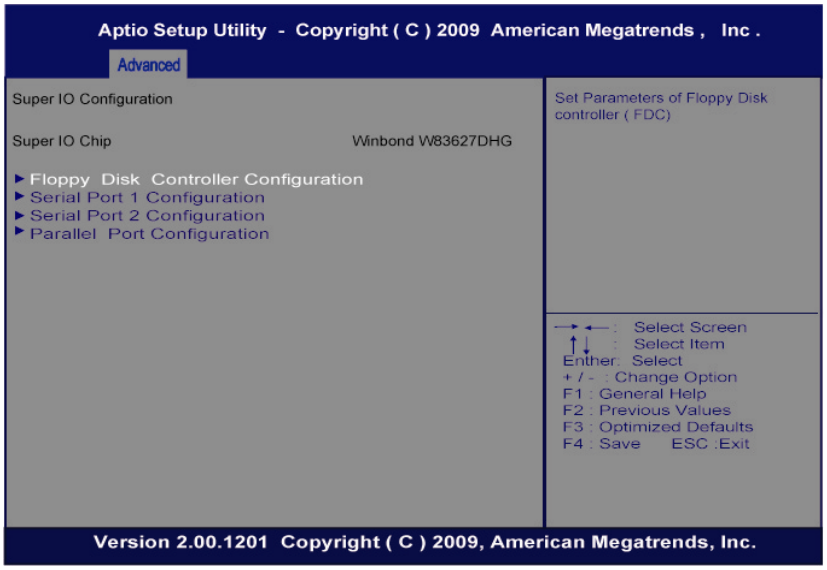
➢ **LCD Panel Type**
Allow you to select resolution of LCD panel.

- **USB Configuration**
  You can use this screen to select options for the USB Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
USB Configuration
USB Devices :
1 Mouse , 2 Hubs
Legacy USB Support [Enabled]
Device Reset timeout [20 sec]
Enables Legacy USB support. AUTO option disables legacy support if no usb devices are connected. DISABLE option will keep usb devices available only for EFI applications.
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

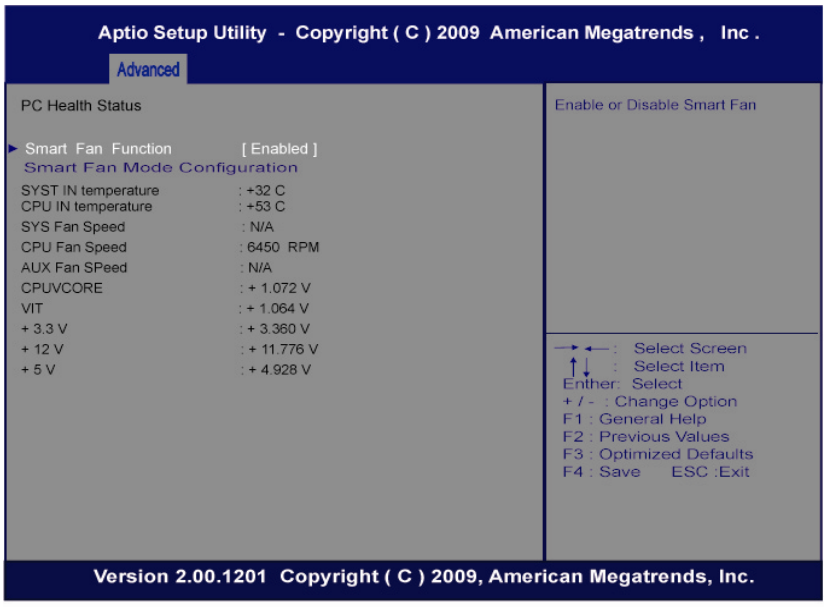
➢ **Legacy USB Support**
Use this item to enable or disable support for USB device on legacy operating system. The default setting is *Enabled*.

- **Super IO Configuration**
  You can use this screen to select options for the Super IO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "►", please press <Enter> for more options.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
Super IO Configuration
Super IO Chip
Winbond W83627DHG
► Floppy Disk Controller Configuration
► Serial Port 1 Configuration
► Serial Port 2 Configuration
► Parallel Port Configuration
Set Parameters of Floppy Disk controller (FDC)
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

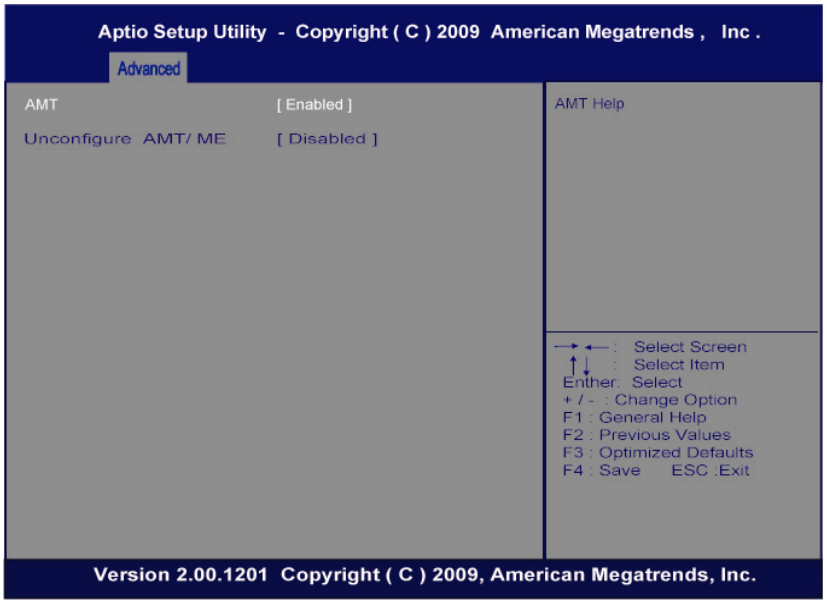
  - **Floppy Disk Controller Configuration**
    You can use this screen to select options for the Floppy Configuration, and change the value of the selected option.
  - **Serial Port 1 Configuration**
    This option specifies the base I/O port address and Interrupt Request address of serial port 1. The Optimal setting is *2F8/IRQ3*.
  - **Serial Port 2 Configuration**
    This option specifies the base I/O port address and Interrupt Request address of serial port 1. The Optimal setting is *3F8/IRQ4*.
  - **Parallel Port Configuration**
    This item allows you to determine the Parallel Port Mode and I/O address for onboard parallel port.

- **H/W Monitor**
  This screen shows the Hardware Health Configuration, and a description of the selected item appears on the right side of the screen.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
PC Health Status
Smart Fan Function [Enabled]
Smart Fan Mode Configuration
SYST IN temperature : +32 C
CPU IN temperature : +53 C
SYS Fan Speed : N/A
CPU Fan Speed : 6450 RPM
AUX Fan SPeed : N/A
CPUVCORE : + 1.072 V
VIT : + 1.064 V
+ 3.3 V : + 3.360 V
+ 12 V : + 11.776 V
+ 5 V : + 4.928 V
Enable or Disable Smart Fan
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

  - **Smart Fan Function**
    This item can enable or disable the Smart Fan function.
  - **Smart Fan Mode Configuration**
    This item can adjust the CPU/System/Auxiliary Fan speed automatically in accordance with the current CPU/System temperature that can prevent the system overheating.
    The Auxiliary Fan also in accordance with current CPU temperature.
    There are these options *Manual Mode* and *Thermal Cruise Mode*.
  - **H/W Health Configuration**
    This screen displays the temperature of CPU and System, Fan Speed, Vcore, etc.

- **AMT Configuration**
  You can use this screen to select options for the Intel AMT Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
AMT [Enabled]
Unconfigure AMT/ ME [Disabled]
AMT Help
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

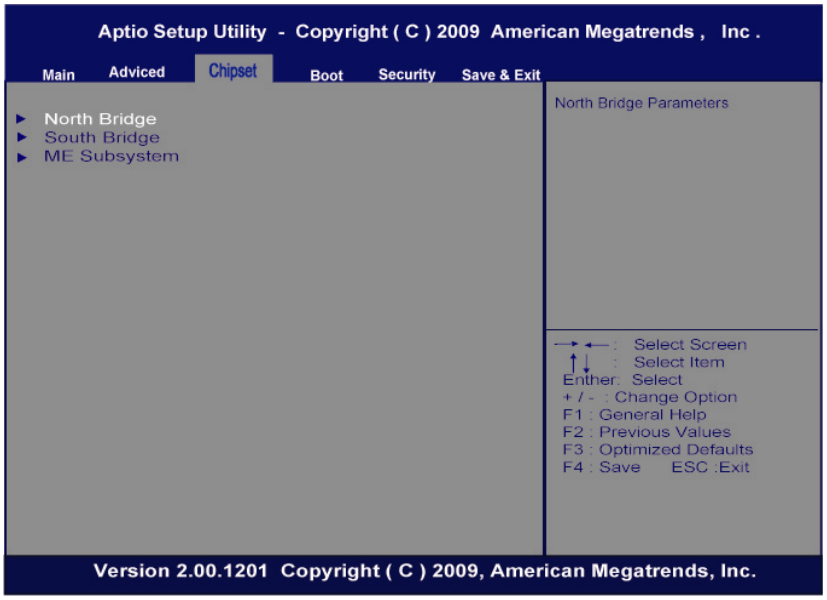
  - **AMT**
    You can enable this item to support AMT (active management technology) function to follow up the procedure for the access to AMI program screen.
  - **Unconfigure AMT/ME**
    Use this item to unconfigure the AMT/ME settings.

4.5 Chipset Menu

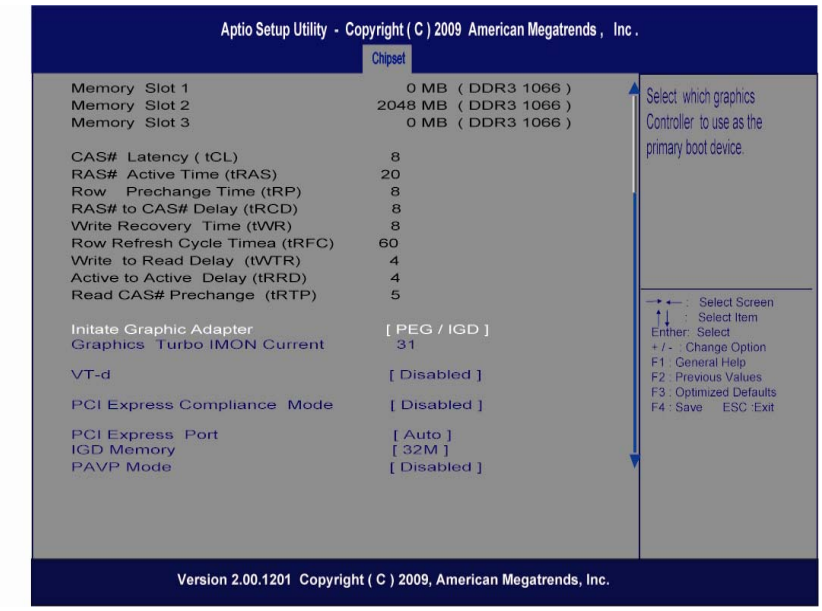
The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

- North Bridge
- South Bridge
- ME Subsystem

For items marked with "►", please press <Enter> for more options.



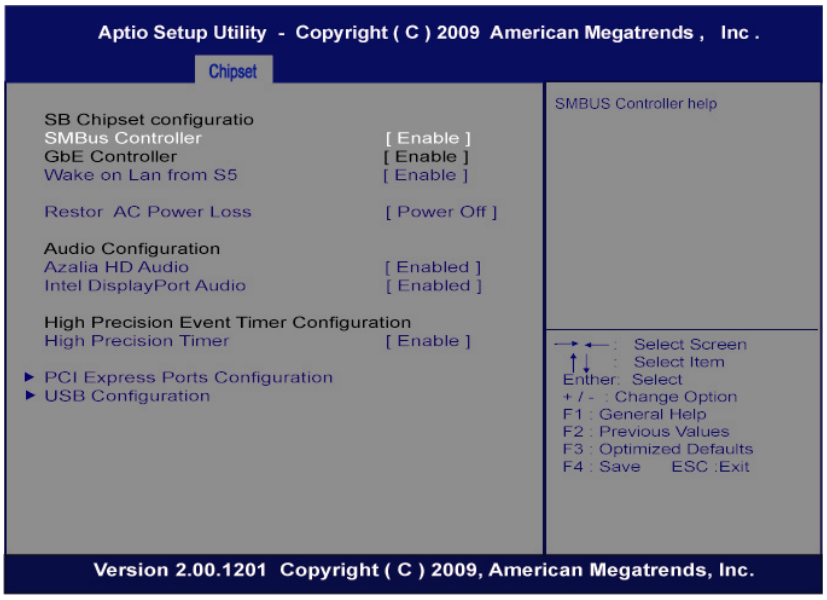
- **North Bridge**


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Chipset
Memory Slot 1 0 MB (DDR3 1066)
Memory Slot 2 2048 MB (DDR3 1066)
Memory Slot 3 0 MB (DDR3 1066)
CAS# Latency (tCL) 8
RAS# Active Time (tRAS) 20
Row Prechange Time (tRP) 8
RAS# to CAS# Delay (tRCD) 8
Write Recovery Time (tWR) 8
Row Refresh Cycle Timea (tRFC) 60
Write to Read Delay (tWTR) 4
Active to Active Delay (tRRD) 4
Read CAS# Prechange (tRTP) 5
Initate Graphic Adapter [PEG / IGD]
Graphics Turbo IMON Current 31
VT-d [Disabled]
PCI Express Compliance Mode [Disabled]
PCI Express Port [Auto]
IGD Memory [32M]
PAVP Mode [Disabled]
Select which graphics Controller to use as the primary boot device.
: Select Screen
: Select Item
Enter: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC : Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

  - **Initiate Graphic Adapter**
    When using multiple graphics cards, this item can select which graphics controller to be the primary display device during boot.
  - **Graphics Turbo IMON Current**
    Use this item to set Graphics Turbo IMON Current form 14 to 31.
  - **VT-d**
    Virtualization Technology for Directed I/O (VT-d) extends Virtualization Technology (VT) roadmap, by providing hardware assists for virtualization solution.
    VT-d can help end users improve security and reliability of the systems and also improve performance of I/O devices in virtualized environment. Here are the options for your selection, *Disabled* and *Enabled*.

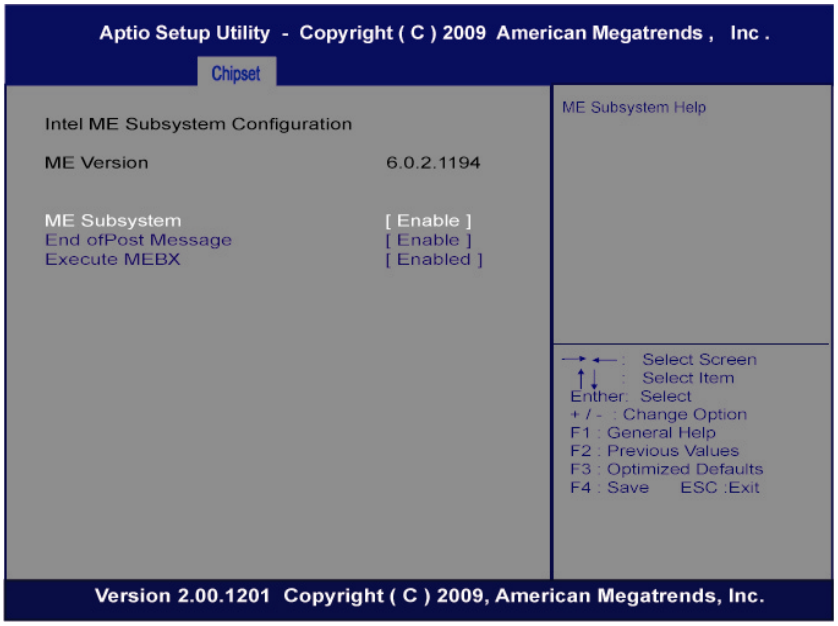
- **PCI Express Compliance Mode**
  Use this item to set PCI Express Compliance Testing Mode. The default setting is *Disable*.
- **PCI Express Port**
  This item is a toggle to enable or disable the PCI Express port. Here are the options for your selection, *Auto* and *Disabled*.
- **IGD Memory**
  This item allows you to select the amount of system memory used by the internal graphics device.

- **South Bridge**


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Chipset
SB Chipset configuratio
SMBus Controller [Enable]
GbE Controller [Enable]
Wake on Lan from S5 [Enable]
Restor AC Power Loss [Power Off]
Audio Configuration
Azalia HD Audio [Enabled]
Intel DisplayPort Audio [Enabled]
High Precision Event Timer Configuration
High Precision Timer [Enable]
PCI Express Ports Configuration
USB Configuration
SMBUS Controller help
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

- **SMBus Controller**
  Use this item to set System Management Bus Mode. The default setting is *Enable*.
- **GbE Controller**
  This item allows you to enabled or disabled Intel® WG82577LM LAN.
- **Wake on LAN from S5**
  This item specifies whether the system will be awakened from the S5 power.
- **Restore AC Power Loss**
  This item can control how the PC will behave once power is restored following a power outage, or other unexpected shutdown.
- **Azalia HD Audio**
  This item allows you to enable or disabled the HD audio support.
- **Intel DisplayPort Audio**
  This item allows you to enable or disabled the Intel DisplayPort Audio support. The default setting is *Enable*. If you want to use an external PCI-E x16 graphic card, you must set this item to *Disable*.
- **PCIE Port Configuration**
  This item allows you to set or disable the PCI Express Ports.
- **USB Configuration**
  You can use this item to set the USB Configuration.

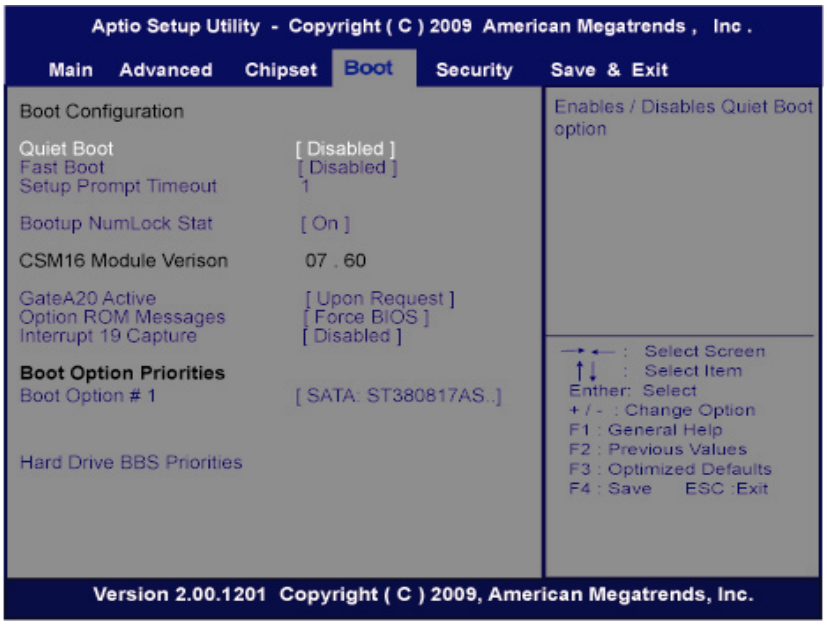
- **Me Subsystem**
  It is strongly recommended that you do not modify these options unless you are an advanced user.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Chipset
Intel ME Subsystem Configuration
ME Version 6.0.2.1194
ME Subsystem [Enable]
End ofPost Message [Enable]
Execute MEBX [Enabled]
ME Subsystem Help
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

4.6 Boot Menu

The Boot menu allows users to change boot options of the system. You can select any of the items in the left frame of the screen to go to the sub menus:

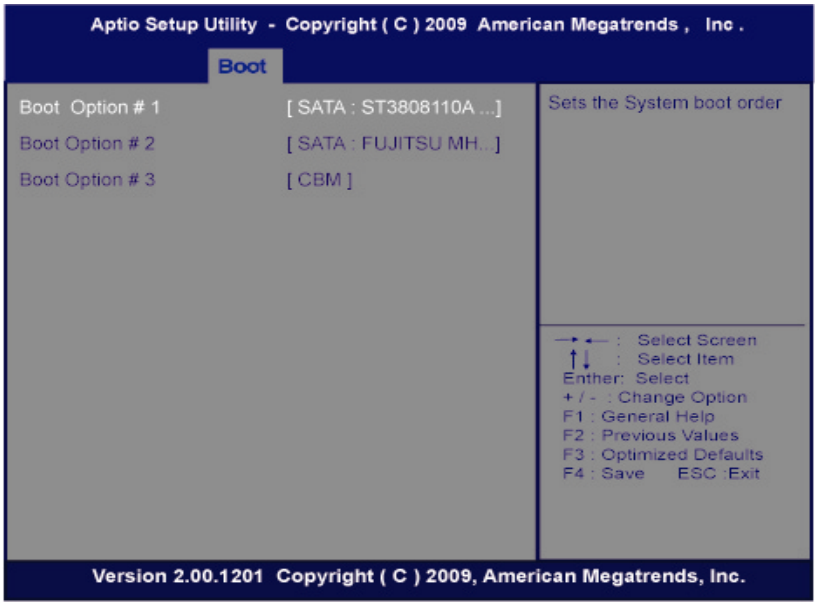
- Quiet Boot
- Fast Boot
- Support Prompt Timeout
- Bootup NumLock State
- GateA20 Active
- Option ROM Messages
- Interrupt 19 Capture
- Hard Drive BBS Priorities


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Quiet Boot [Disabled]
Fast Boot [Disabled]
Setup Prompt Timeout 1
Bootup NumLock Stat [On]
CSM16 Module Verison 07 . 60
GateA20 Active [Upon Request]
Option ROM Messages [Force BIOS]
Interrupt 19 Capture [Disabled]
Boot Option Priorities
Boot Option # 1 [SATA: ST380817AS..]
Hard Drive BBS Priorities
Enables / Disables Quiet Boot option
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

- **Quite Boot**
  Use this item to enable or disable the Quite Boot state. The default setting is *Disable*.
- **Fast Boot**
  Use this item to enable or disable the Fast Boot state. The default setting is *Disable*.
- **Bootup NumLock State**
  Use this item to select the power-on state for the NumLock. The default setting is *On*.
- **Interrupt 19 Capture**
  If this item is enabled, this function makes the option ROMs to trap Interrupt 19. The default setting is *Disabled*.

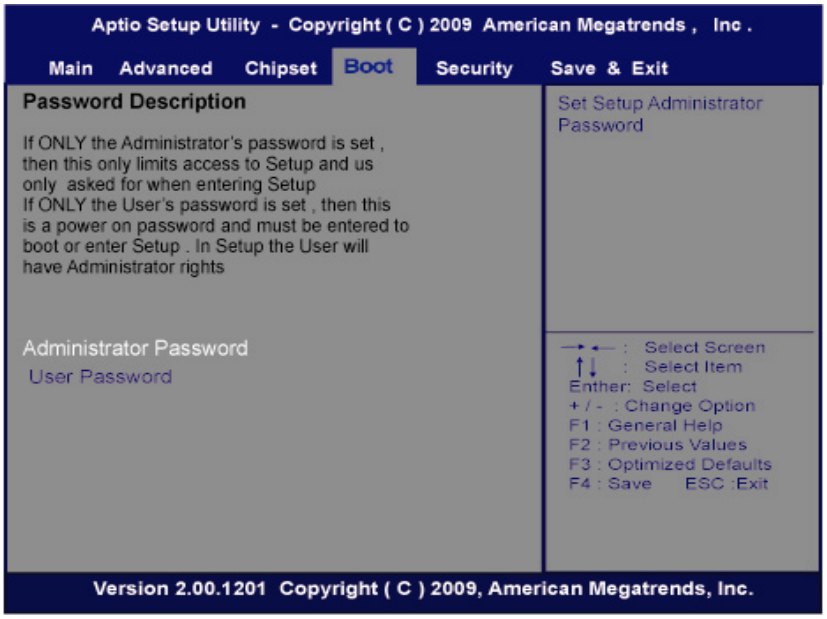
- **Hard Drive BBS Priorities**

  The Hard Drive BBS Priorities screen specifies the boot device priority sequence from the available devices.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Boot
Boot Option # 1
[SATA : ST3808110A ...]
Boot Option # 2
[SATA : FUJITSU MH..]
Boot Option # 3
[CBM]
Sets the System boot order
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

4.7 Security Menu

The Security menu allows users to change the security settings for the system.

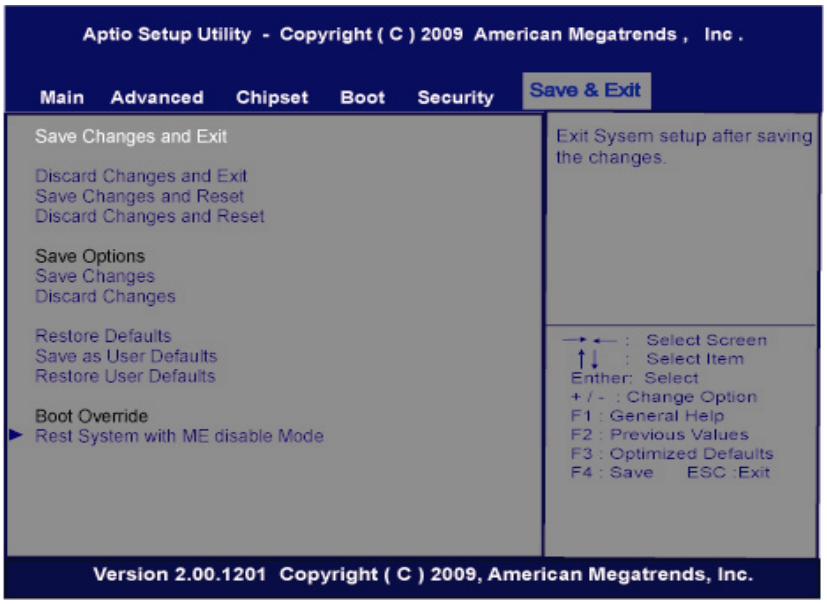

Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set , then this only limits access to Setup and us only asked for when entering Setup
If ONLY the User's password is set , then this is a power on password and must be entered to boot or enter Setup . In Setup the User will have Administrator rights
Administrator Password
User Password
Set Setup Administrator Password
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

- **Administrator Password**
  This item indicates whether an administrator password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

- **User Password**
  This item indicates whether a user password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

4.8 Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with optimal or failsafe default values.



- **Save Changes and Exit**
  When you have completed the system configuration changes, select this option to leave Setup and return to Main Menu. Select *Save Changes and Exit* from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit.

- **Discard Changes and Exit**
  Select this option to quit Setup without making any permanent changes to the system configuration and return to Main Menu. Select *Discard Changes and Exit* from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit.

- **Save Changes and Reset**
  When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select *Save Changes and Reset* from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

- **Discard Changes and Reset**
  Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select *Discard Changes and Reset* from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

- **Save Changes**
  When you have completed the system configuration changes, select this option to save changes. Select *Save Changes* from the Save & Exit menu and press <Enter>. Select Yes to save changes.

- **Discard Changes**
  Select this option to quit Setup without making any permanent changes to the system configuration. Select *Discard Changes* from the Save & Exit menu and press <Enter>. Select Yes to discard changes.

- **Restore Defaults**
  It automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems. Select Restore Defaults from the save & Exit menu and press <Enter>.

APPENDIX A

WATCHDOG TIMER

Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

Start
↓
Un-Lock WDT
:O 2E 87 ; Un-lock super I/O
O 2E 87 ; Un-lock super I/O
↓
Set WDT Function
O 2E 2D
O 2F 20
Select Logic device
O 2E 07
O 2F 08
↓
Activate WDT
:O 2E 30
O 2F 01

Set Second or Minute
O 2E F5
O 2F N N=00 or 08(See below table)
↓
Set base timer
:O 2E F6
O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255
↓
WDT counting

re-set timer **:O 2E F6**
O 2F M ; M=00,01,02,…FF(See below table)
↓
IF No re-set timer **:WDT time-out, generate RESET**

IF to disable WDT **:O 2E 30**
O 2F 00 ; Can be disable at any time

N=00

M= 00h: Time-out Disable
01h: Time-out occurs after 1 second
02h: Time-out occurs after 2 second
03h: Time-out occurs after 3 second
…….....
FFh: Time-out occurs after 255 second

N=08

M= 00h: Time-out Disable
01h: Time-out occurs after 1 minute
02h: Time-out occurs after 2 minutes
03h: Time-out occurs after 3 minutes
…….....

FFh: Time-out occurs after 255 minutes

APPENDIX B
PCI IRQ ROUTING

PICMG PCI IRQ Routing

Device	ID	Slot	Int
PCI Slot 0	31	0	BCDA
PCI Slot 1	30	1	CDAB
PCI Slot 2	29	2	DABC
PCI Slot 3	28	3	ABCD

APPENDIX C
CONFIGURING SATA FOR RAID FUNCTION

Configuring SATA Hard Drive(s) for RAID Function (Controller: Intel® QM57)

Please follow up the steps below to configure SATA hard drive(s):

(1) Install SATA hard drive(s) in your system.
(2) Enter the BIOS Setup to configure SATA controller mode and boot sequence.
(3) Configure RAID by the RAID BIOS.
(4) Install the SATA controller driver during the OS installation.

Before you begin the SATA configuration, please prepare:
(a) Two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID with the SATA controller, you may prepare only one hard drive.
(b) An empty formatted floppy disk
(c) Windows XP setup disk

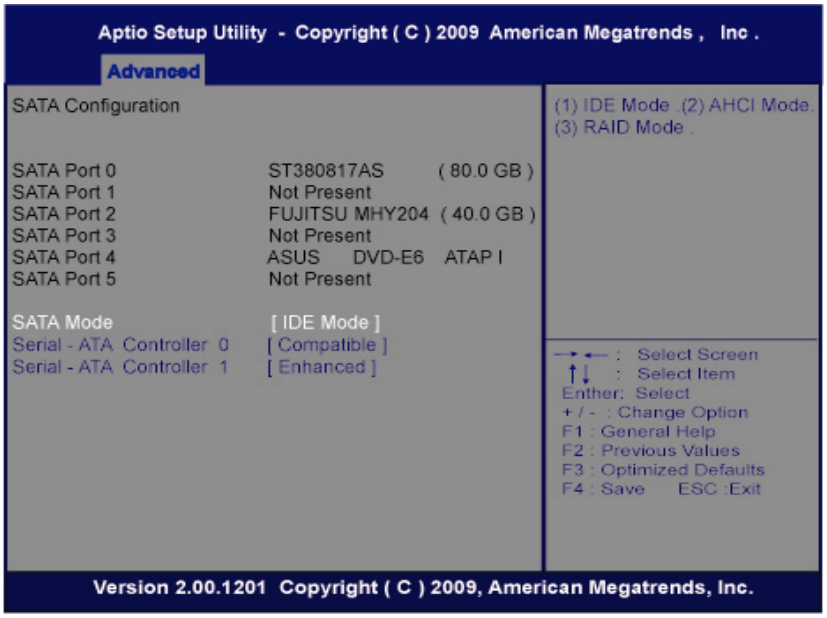
(1) Installing SATA hard drive(s) in your system

Connect one end of the SATA signal cable to the rear of the SATA hard drive, and the other end to available SATA port(s) on the board. Then, connect the power connector of power supply to the hard drive.

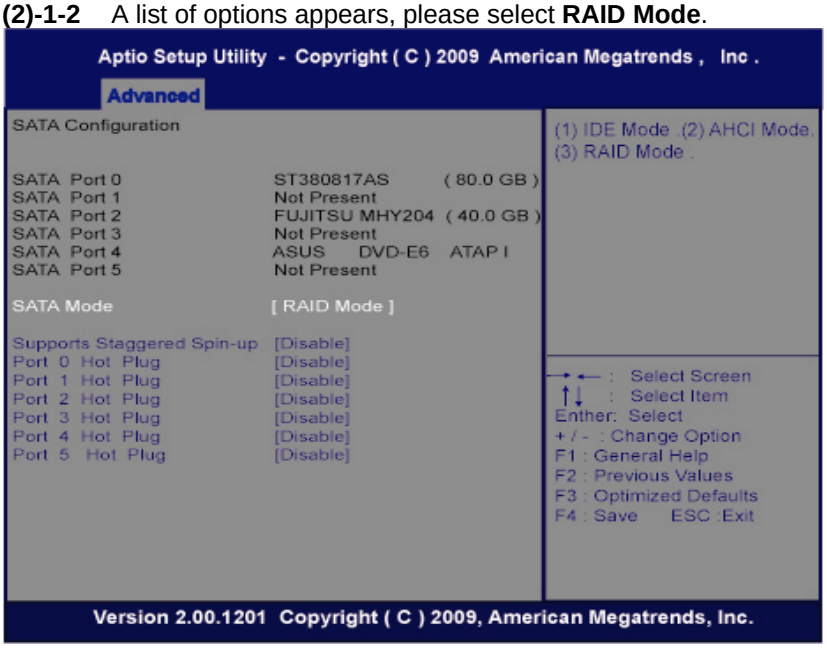
(2) Configuring SATA controller mode and boot sequence by the BIOS Setup

You have to make sure whether the SATA controller is configured correctly by system BIOS Setup and set up BIOS boot sequence for the SATA hard drive(s).

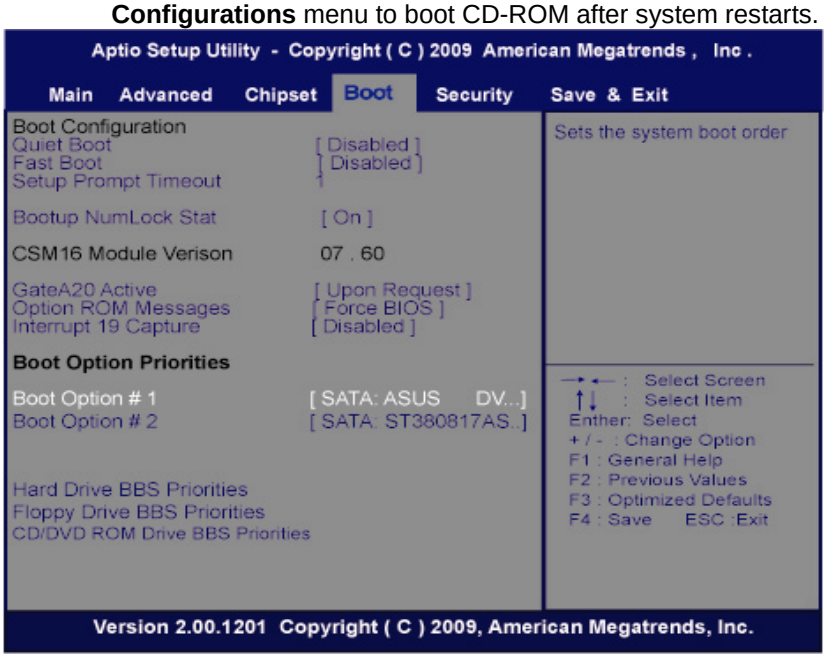
(2)-1-1 Turn on your system, and then press the F2 button to enter BIOS Setup during running POST (Power-On Self Test). If you want to create RAID, just go to the Advanced Settings menu/SATA configuration, select the **SATA Mode**, and press <Enter> for more options.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
SATA Configuration
(1) IDE Mode ,(2) AHCI Mode,
(3) RAID Mode .
SATA Port 0 ST380817AS (80.0 GB)
SATA Port 1 Not Present
SATA Port 2 FUJITSU MHY204 (40.0 GB)
SATA Port 3 Not Present
SATA Port 4 ASUS DVD-E6 ATAP I
SATA Port 5 Not Present
SATA Mode [IDE Mode]
Serial - ATA Controller 0 [Compatible]
Serial - ATA Controller 1 [Enhanced]
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

(2)-1-2 A list of options appears, please select **RAID Mode**.


Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Advanced
SATA Configuration
SATA Port 0 ST380817AS (80.0 GB)
SATA Port 1 Not Present
SATA Port 2 FUJITSU MHY204 (40.0 GB)
SATA Port 3 Not Present
SATA Port 4 ASUS DVD-E6 ATAP I
SATA Port 5 Not Present
SATA Mode [RAID Mode]
Supports Staggered Spin-up [Disable]
Port 0 Hot Plug [Disable]
Port 1 Hot Plug [Disable]
Port 2 Hot Plug [Disable]
Port 3 Hot Plug [Disable]
Port 4 Hot Plug [Disable]
Port 5 Hot Plug [Disable]
(1) IDE Mode .(2) AHCI Mode.
(3) RAID Mode .
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

(2)-2 Set **CDROM** for **Boot Option #1** under the **Boot Configurations** menu to boot CD-ROM after system restarts.

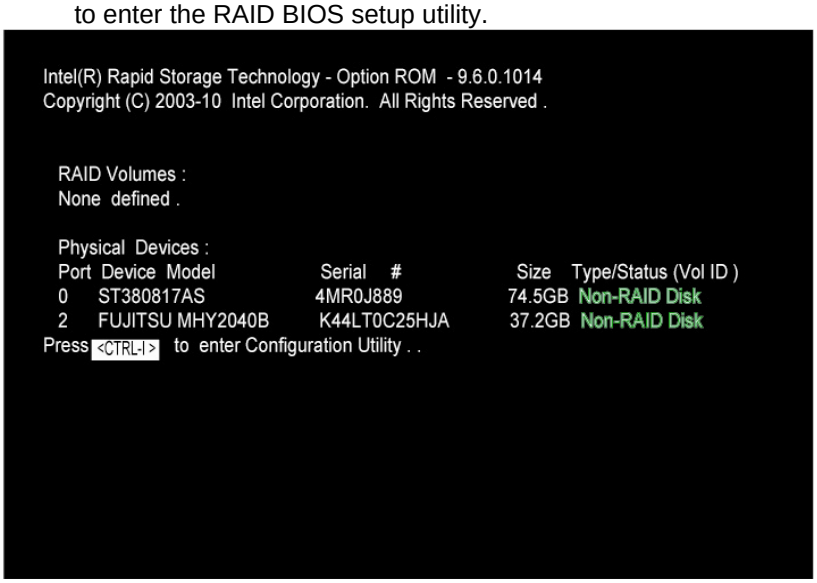

Aptio Setup Utility - Copyright (C) 2009 American Megatrends , Inc .
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Quiet Boot [Disabled]
Fast Boot [Disabled]
Setup Prompt Timeout 1
Bootup NumLock Stat [On]
CSM16 Module Verison 07 . 60
GateA20 Active [Upon Request]
Option ROM Messages [Force BIOS]
Interrupt 19 Capture [Disabled]
Boot Option Priorities
Boot Option # 1 [SATA: ASUS DV...]
Boot Option # 2 [SATA: ST380817AS.]
Hard Drive BBS Priorities
Floppy Drive BBS Priorities
CD/DVD ROM Drive BBS Priorities
Sets the system boot order
: Select Screen
: Select Item
Enther: Select
+ / - : Change Option
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save ESC :Exit
Version 2.00.1201 Copyright (C) 2009, American Megatrends, Inc.

(2)-3 Save and exit the BIOS Setup.

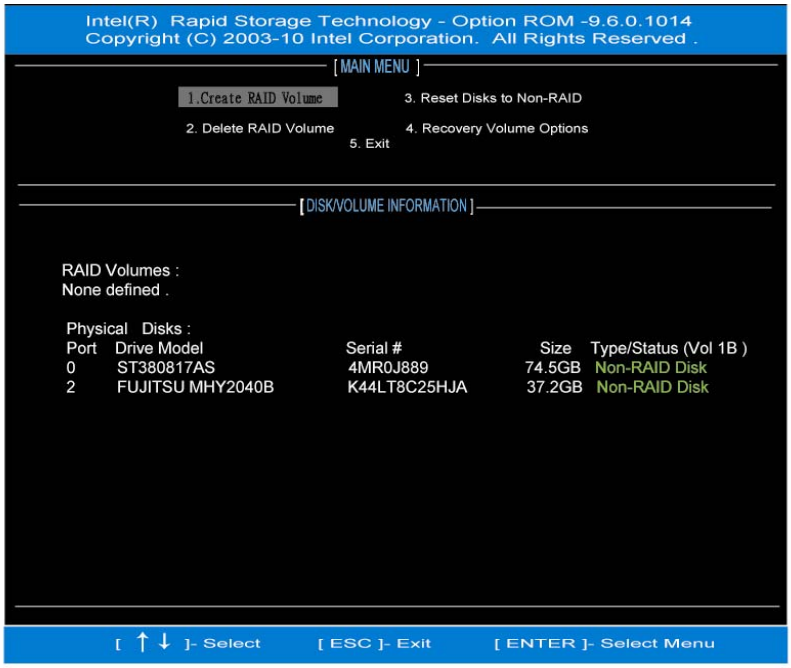
(3) Configuring RAID by the RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array. Skip this step and proceed to Section 4 if you do not want to create a RAID.

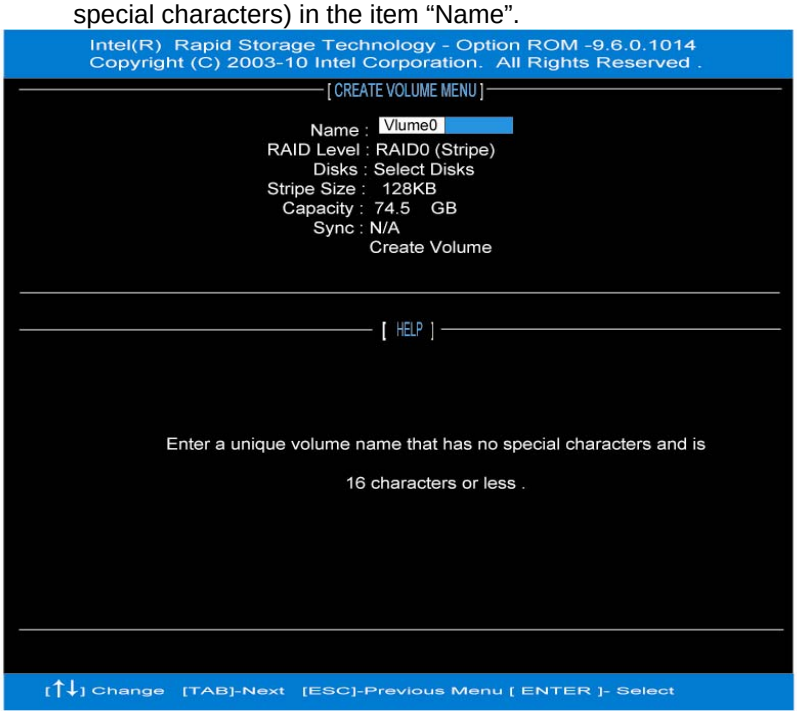
(3)-1 After the POST memory testing and before the operating system booting, a message "*Press <Ctrl-I> to enter Configuration Utility*" shows up, accordingly, press <CTRL+ I> to enter the RAID BIOS setup utility.


Intel(R) Rapid Storage Technology - Option ROM - 9.6.0.1014
Copyright (C) 2003-10 Intel Corporation. All Rights Reserved .
RAID Volumes :
None defined .
Physical Devices :
Port Device Model Serial # Size Type/Status (Vol ID)
0 ST380817AS 4MR0J889 74.5GB Non-RAID Disk
2 FUJITSU MHY2040B K44LT0C25HJA 37.2GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility . .

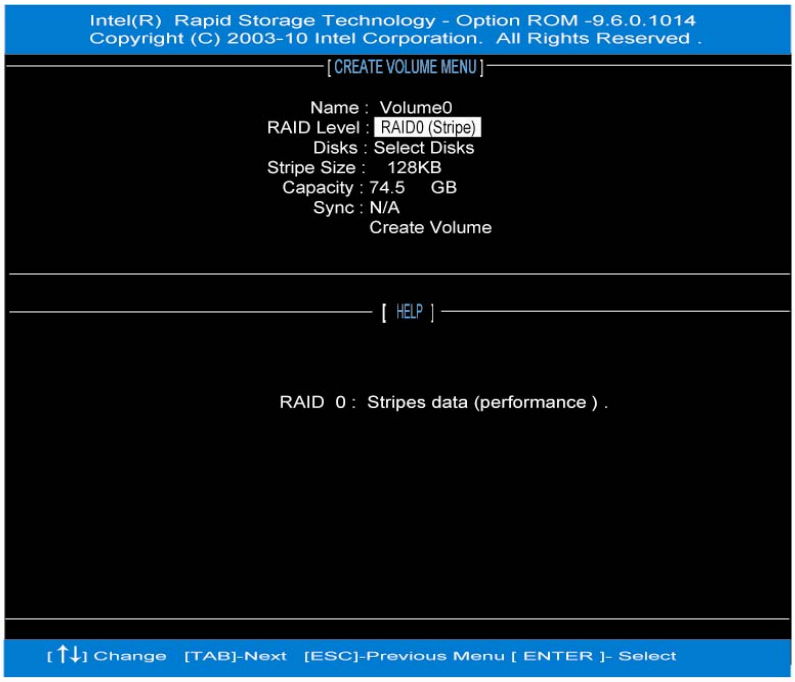
(3)-2 After you press <CTRL+ I>, the **Create RAID Volume** screen will appear. If you want to create a RAID array, select the **Create RAID Volume** option in the Main Menu and press ENTER.


Intel(R) Rapid Storage Technology - Option ROM -9.6.0.1014
Copyright (C) 2003-10 Intel Corporation. All Rights Reserved .
[MAIN MENU]
1.Create RAID Volume
3. Reset Disks to Non-RAID
2. Delete RAID Volume
4. Recovery Volume Options
5. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes :
None defined .
Physical Disks :
Port Drive Model Serial # Size Type/Status (Vol 1B)
0 ST380817AS 4MR0J889 74.5GB Non-RAID Disk
2 FUJITSU MHY2040B K44LT8C25HJA 37.2GB Non-RAID Disk
[↑ ↓]- Select
[ESC]- Exit
[ENTER]- Select Menu

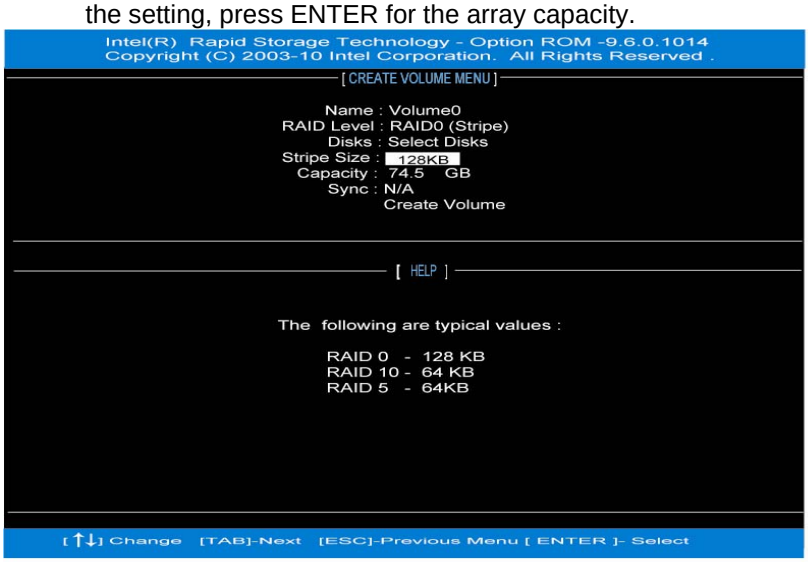
(3)-3-1 After entering the **CREATE VOLUME MENU** screen, you can type the disk array name with 1~16 letters (letters cannot be special characters) in the item "Name".


Intel(R) Rapid Storage Technology - Option ROM -9.6.0.1014
Copyright (C) 2003-10 Intel Corporation. All Rights Reserved .
[CREATE VOLUME MENU]
Name : Vlume0
RAID Level : RAID0 (Stripe)
Disks : Select Disks
Stripe Size : 128KB
Capacity : 74.5 GB
Sync : N/A
Create Volume
[HELP]
Enter a unique volume name that has no special characters and is
16 characters or less .
[↑↓] Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

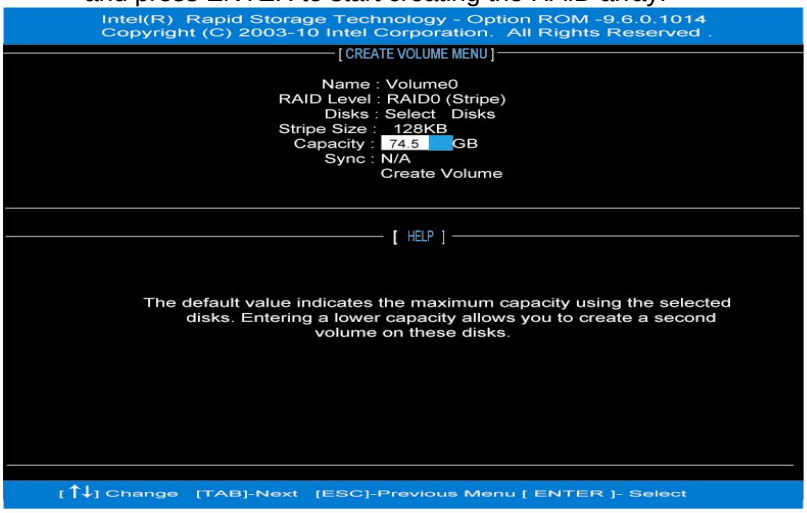
(3)-3-2 When finished, press ENTER to select a RAID level. There are three RAID levels, RAID0, RAID1 and RAID5 & RAID10. Select a RAID level and press ENTER.


Intel(R) Rapid Storage Technology - Option ROM -9.6.0.1014
Copyright (C) 2003-10 Intel Corporation. All Rights Reserved .
[CREATE VOLUME MENU]
Name : Volume0
RAID Level : RAID0 (Stripe)
Disks : Select Disks
Stripe Size : 128KB
Capacity : 74.5 GB
Sync : N/A
Create Volume
[HELP]
RAID 0 : Stripes data (performance) .
[↑↓] Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

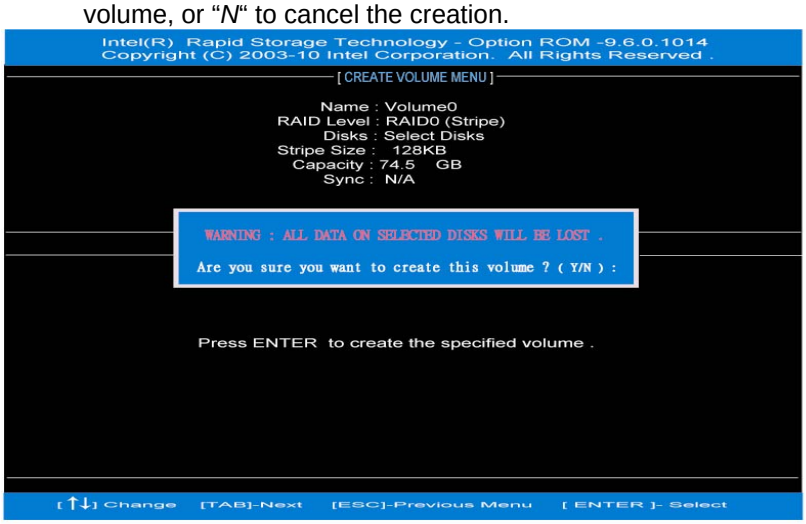
(3)-3 Set the stripe block size. The *KB* is the standard unit of stripe block size. The stripe block size can be 4KB to 128KB. After the setting, press ENTER for the array capacity.


Intel(R) Rapid Storage Technology - Option ROM -9.6.0.1014
Copyright (C) 2003-10 Intel Corporation. All Rights Reserved .
[CREATE VOLUME MENU]
Name : Volume0
RAID Level : RAID0 (Stripe)
Disks : Select Disks
Stripe Size : 128KB
Capacity : 74.5 GB
Sync : N/A
Create Volume
[HELP]
The following are typical values :
RAID 0 - 128 KB
RAID 10 - 64 KB
RAID 5 - 64KB
[↑↓] Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

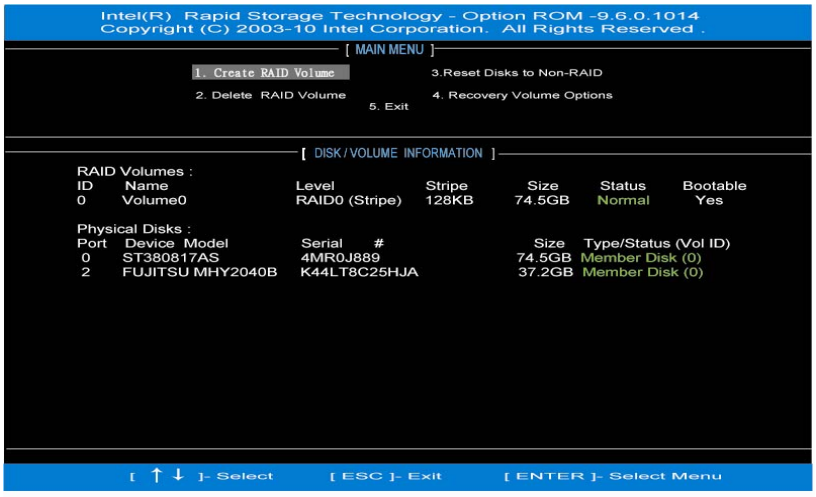
(3)-4 After setting all the items on the menu, select **Create Volume** and press ENTER to start creating the RAID array.


Intel(R) Rapid Storage Technology - Option ROM -9.6.0.1014
Copyright (C) 2003-10 Intel Corporation. All Rights Reserved .
[CREATE VOLUME MENU]
Name : Volume0
RAID Level : RAID0 (Stripe)
Disks : Select Disks
Stripe Size : 128KB
Capacity : 74.5 GB
Sync : N/A
Create Volume
[HELP]
The default value indicates the maximum capacity using the selected disks. Entering a lower capacity allows you to create a second volume on these disks.
[↑↓] Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

(3)-5 When prompting the confirmation, press "*Y*" to create this volume, or "*N*" to cancel the creation.

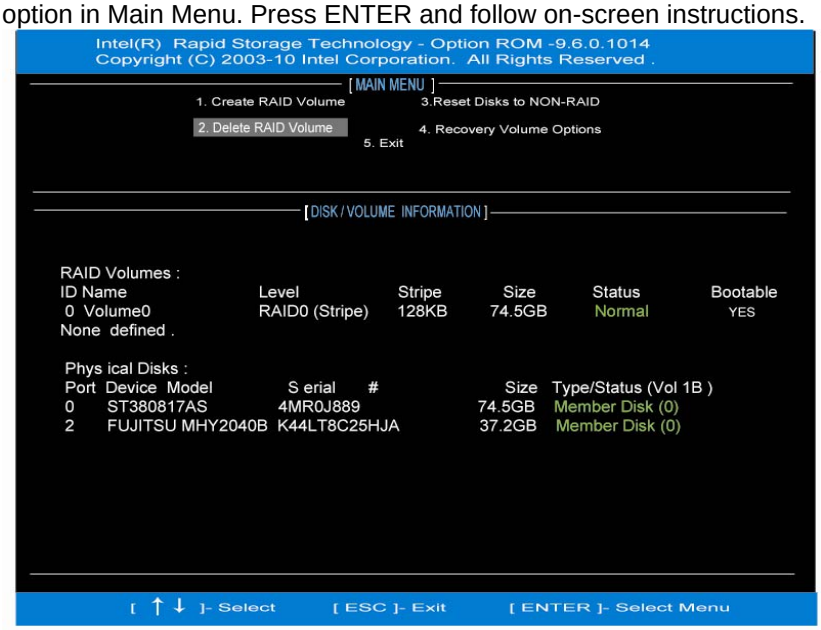

Intel(R) Rapid Storage Technology - Option ROM -9.6.0.1014
Copyright (C) 2003-10 Intel Corporation. All Rights Reserved .
[CREATE VOLUME MENU]
Name : Volume0
RAID Level : RAID0 (Stripe)
Disks : Select Disks
Stripe Size : 128KB
Capacity : 74.5 GB
Sync : N/A
WARNING : ALL DATA ON SELECTED DISKS WILL BE LOST .
Are you sure you want to create this volume ? (Y/N) :
Press ENTER to create the specified volume .
[↑↓] Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

After the creation is completed, you can see detailed information about the RAID Array in the DISK/VOLUME INFORMATION section, including RAID mode, disk block size, disk name, and disk capacity, etc.


Intel(R) Rapid Storage Technology - Option ROM -9.6.0.1014
Copyright (C) 2003-10 Intel Corporation. All Rights Reserved .
[MAIN MENU]
1. Create RAID Volume
2. Delete RAID Volume
3.Reset Disks to Non-RAID
4. Recovery Volume Options
5. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes :
ID Name Level Stripe Size Status Bootable
0 Volume0 RAID0 (Stripe) 128KB 74.5GB Normal Yes
Physical Disks :
Port Device Model Serial # Size Type/Status (Vol ID)
0 ST380817AS 4MR0J889 74.5GB Member Disk (0)
2 FUJITSU MHY2040B K44LT8C25HJA 37.2GB Member Disk (0)
[↑ ↓]- Select [ESC]- Exit [ENTER]- Select Menu

Delete RAID Volume

If you want to delete a RAID volume, select the **Delete RAID Volume** option in Main Menu. Press ENTER and follow on-screen instructions.


Intel(R) Rapid Storage Technology - Option ROM -9.6.0.1014
Copyright (C) 2003-10 Intel Corporation. All Rights Reserved .
[MAIN MENU]
1. Create RAID Volume
3.Reset Disks to NON-RAID
2. Delete RAID Volume
4. Recovery Volume Options
5. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes :
ID Name Level Stripe Size Status Bootable
0 Volume0 RAID0 (Stripe) 128KB 74.5GB Normal YES
None defined .
Phys ical Disks :
Port Device Model S erial # Size Type/Status (Vol 1B)
0 ST380817AS 4MR0J889 74.5GB Member Disk (0)
2 FUJITSU MHY2040B K44LT8C25HJA 37.2GB Member Disk (0)
[↑ ↓]- Select
[ESC]- Exit
[ENTER]- Select Menu

Please press [ESC] to exit the RAID BIOS utility.

Now, you can proceed to install a SATA driver controller and the operating system.

(4) Making a SATA Driver Disk

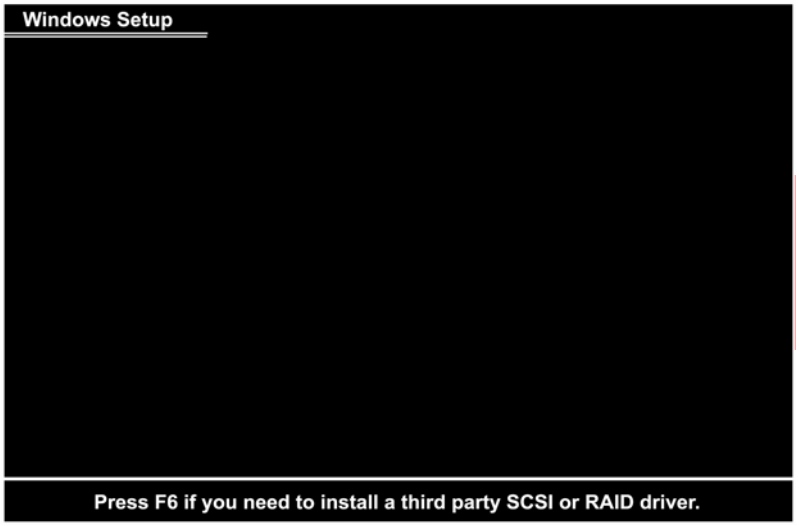
To install the operating system onto a serial ATA hard disk successfully, you need to install the SATA controller driver during the OS installation. Without the driver, the hard disk may not be recognized during the Windows setup process. First of all, please format a blank floppy disk. Secondly, follow up these steps below to produce a SATA driver disk.

Users can insert the Driver CD and the formatted blank floppy disk in another system. And then, please copy all of file of the f6flpy32 folder in the Driver CD to a floppy disk.

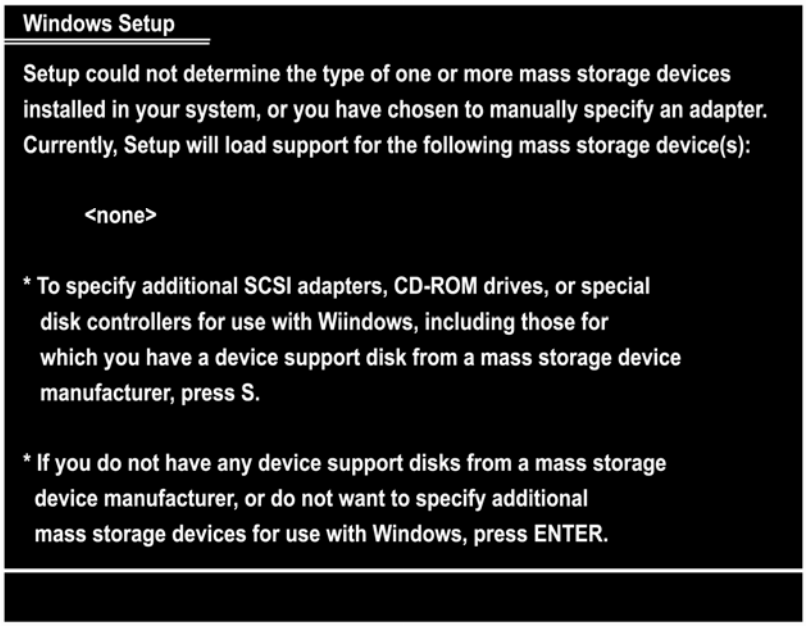
Note *Please copy all of file of the f6flpy64 folder, if installing 64-bit Windows Operating System.*

(5) Installing the SATA controller driver during the OS installation
Now, the SATA driver disk is ready, and BIOS settings configured, you can proceed to install Windows 2000/XP onto your SATA hard drive using the SATA driver. Here is an example for Windows XP installation.

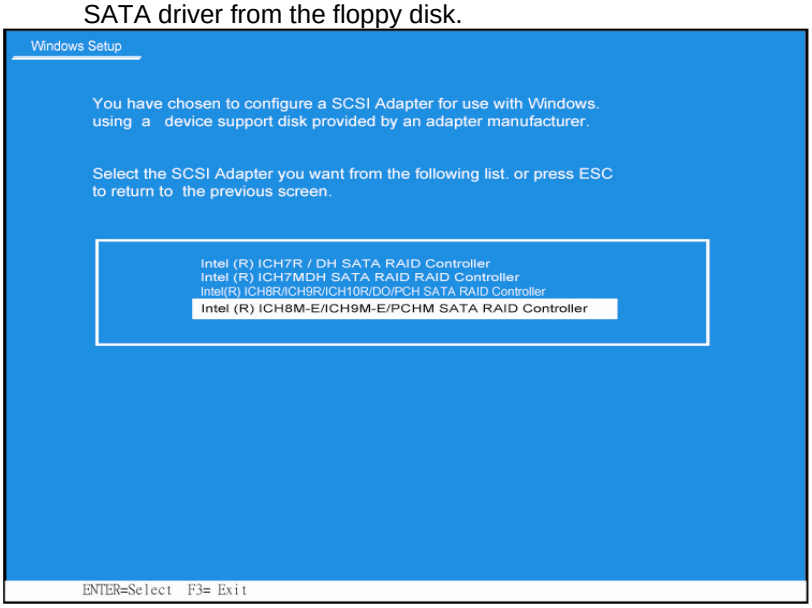
(5)-1 Restart your system to boot the Windows 2000/XP Setup disk, and press F6 button as soon as you see the message "*Press F6 if you need to install a 3rd party SCSI or RAID driver*". After pressing the F6 button, there will be a few moments for some files being loaded before next screen appears.



(5)-2 When you see the screen below, insert the floppy disk containing the SATA driver and press "*S*".


Windows Setup
Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage device(s):
<none>
* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Wiindows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.

(5)-3 If the Setup correctly recognizes the driver of the floppy disk, a controller menu will appear below. Use the ARROW keys to select **Intel® ICH8M-E/ICH9M-E/PCHM SATA RAID Controller** and press ENTER**.** Then it will begin to load the SATA driver from the floppy disk.


Windows Setup
You have chosen to configure a SCSI Adapter for use with Windows.
using a device support disk provided by an adapter manufacturer.
Select the SCSI Adapter you want from the following list. or press ESC
to return to the previous screen.
Intel (R) ICH7R / DH SATA RAID Controller
Intel (R) ICH7MDH SATA RAID RAID Controller
Intel(R) ICH8R/ICH9R/ICH10R/DO/PCH SATA RAID Controller
Intel (R) ICH8M-E/ICH9M-E/PCHM SATA RAID Controller
ENTER=Select F3= Exit

Note *If a message on the screen saying that one or some file(s) cannot be found, please check the floppy disk or copy the correct SATA driver again from the driver CD.*

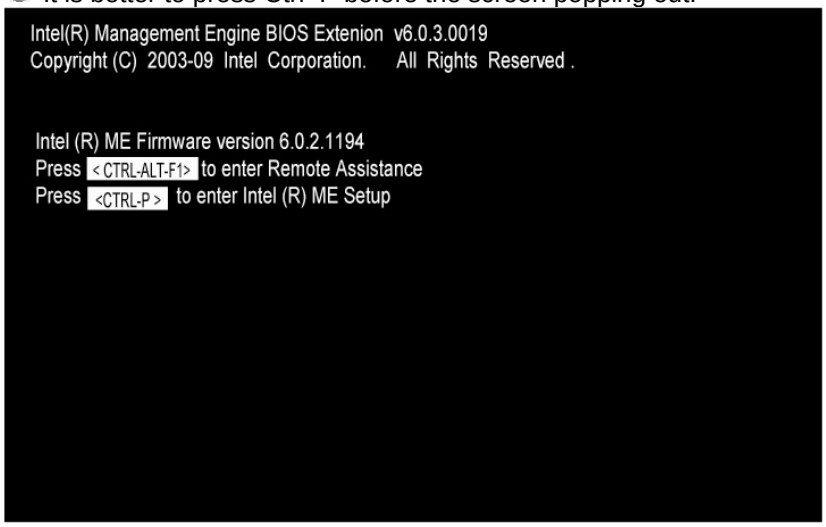
APPENDIX D
Intel® iAMT SETTINGS

The Intel® Active Management Technology (Intel® iAMT) has decreased a major barrier to IT efficiency that uses built-in platform capabilities and popular third-party management and security applications to allow IT a better discovering, healing, and protection their networked computing assets.
In order to utilize Intel® iAMT you must enter the ME BIOS (CTRL + P during system startup), change the ME BIOS password, and then select "Intel® iAMT" as the manageability feature.

D.1 Entering MEBx

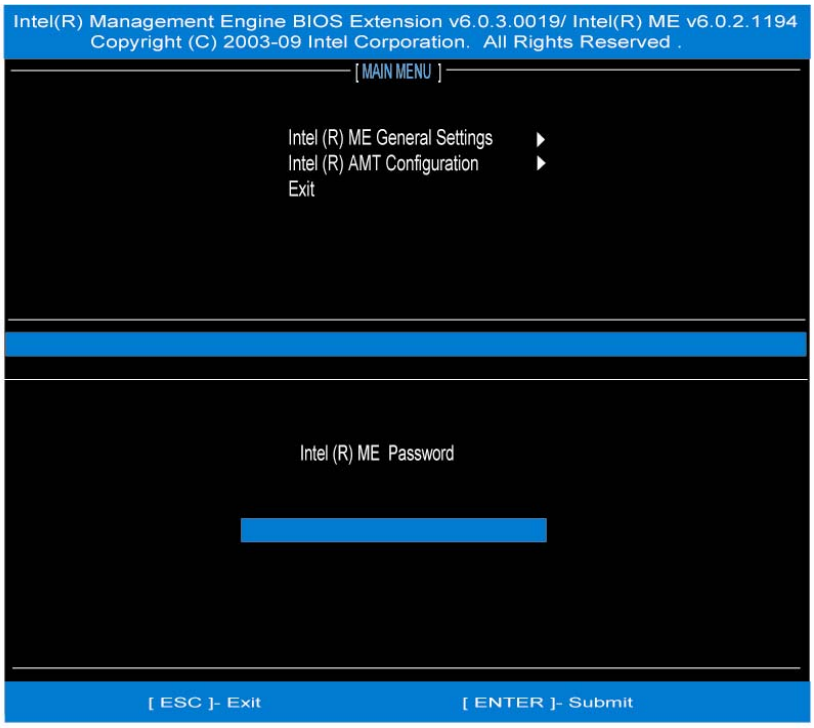
1. You must go to BIOS to enable Intel® iAMT function.
2. Exit from BIOS after starting Intel® iAMT, and press Ctrl+P to enter MEBx Setting.

It is better to press Ctrl+P before the screen popping out.

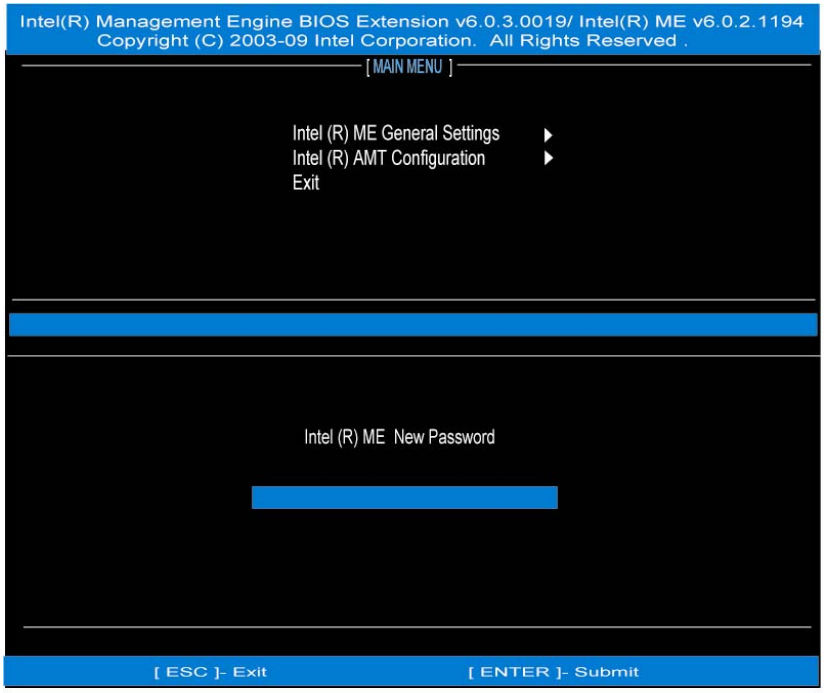

Intel(R) Management Engine BIOS Extenion v6.0.3.0019
Copyright (C) 2003-09 Intel Corporation. All Rights Reserved .
Intel (R) ME Firmware version 6.0.2.1194
Press < CTRL-ALT-F1> to enter Remote Assistance
Press <CTRL-P > to enter Intel (R) ME Setup

D.2 Set & Change Password

1. You will be asked to set a password when first log in. The default password is 'admin'.


Intel(R) Management Engine BIOS Extension v6.0.3.0019/ Intel(R) ME v6.0.2.1194
Copyright (C) 2003-09 Intel Corporation. All Rights Reserved .
[MAIN MENU]
Intel (R) ME General Settings
Intel (R) AMT Configuration
Exit
Intel (R) ME Password
[ESC]- Exit
[ENTER]- Submit

2. **You will be asked to change the** password before setting ME.


Intel(R) Management Engine BIOS Extension v6.0.3.0019/ Intel(R) ME v6.0.2.1194
Copyright (C) 2003-09 Intel Corporation. All Rights Reserved .
[MAIN MENU]
Intel (R) ME General Settings
Intel (R) AMT Configuration
Exit
Intel (R) ME New Password
[ESC]- Exit
[ENTER]- Submit

3. You must confirm your new password while revising.

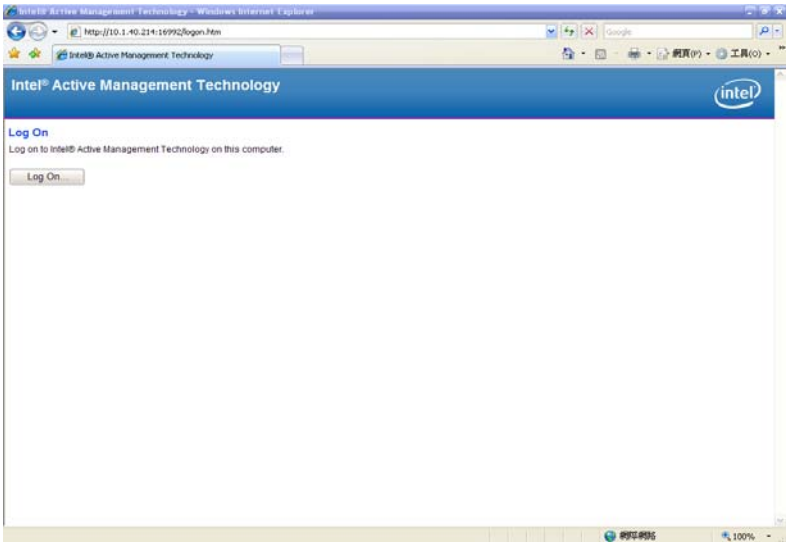
The new password must contain:
(example:**!!11qqQQ**) (default value)

- Eight characters
- One upper case
- One lower case
- One number
- One special symbol, such as **!** 、**$** or **;** ，
  (、**"** , excepted)

Underline (_) and space are valid characters for password, but they won't make higher complexity.

D.3 Intel® iAMT Web Console

1. From a web browser, please type http :///(IP ADDRESS):16992, which connects to Intel® iAMT Web.
   Example: http://10.1.40.214:16992

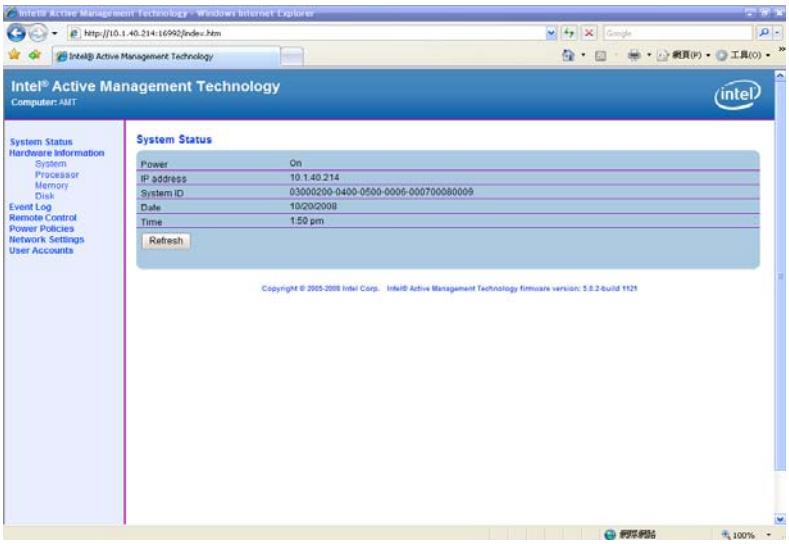


2. To log on, you will be required to type in username and password for access to the Web.

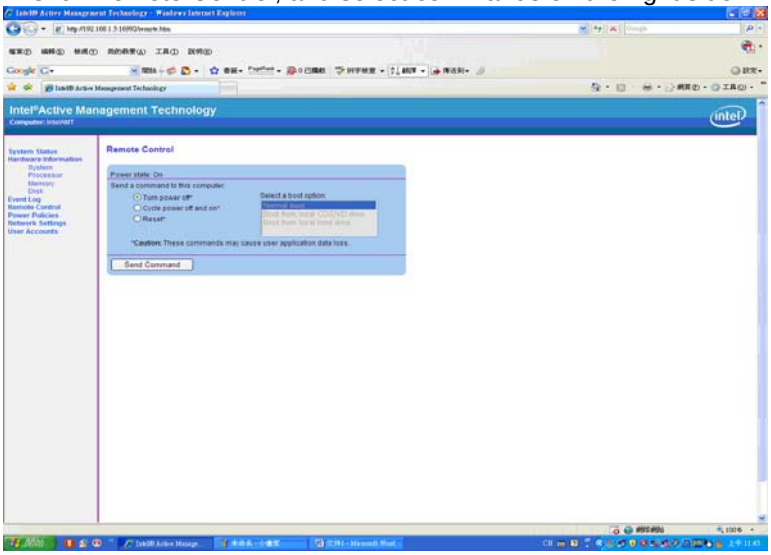
   USER: admin (default value)

   PASS: (MEBx password)

3. Enter the iAMT Web.



4. Click Remote Control, and select commands on the right side.



5. When you have finished using the iAMT Web console, close the Web browser.

APPENDIX E

PICMG v1.3 INTERFACE DEFINITION

x16 PCIe Connector A			x16 PCIe Connector C		
	Side B	Side A		Side B	Side A
1	N.C	N.C	1	USB0P	GND
2	GND	GND	2	USB0N	GND
3	N.C	N.C	3	GND	USB1P
4	N.C	N.C	4	GND	USB1N
5	N.C	WAKE#	5	USB2P	GND
6	PWRBT#	PME#	6	USB2N	GND
7	PWRGD	PSON#	7	GND	USB3P
8	SHB_RST#	PERST#	8	GND	USB3N
9	CFG0	CFG1	9	USBOC0#	GND
10	CFG2	CFG3	10	GND	USBOC1#
11	RSVD	GND	11	USBOC2#	GND
Mechanical Key					
12	GND	N.C	12	GND	USBOC3#
13	b_PETp0	GND	13	N.C	GND
14	b_PETn0	GND	14	N.C	GND
15	GND	b_PERp0	15	GND	N.C
16	GND	b_PERn0	16	GND	N.C
17	b_PETp1	GND	17	N.C	GND
18	b_PETn1	GND	18	N.C	GND
19	GND	b_PERp1	19	GND	N.C
20	GND	b_PERn1	20	GND	N.C
21	b_PETp2	GND	21	N.C	GND
22	b_PETn2	GND	22	N.C	GND
23	GND	b_PERp2	23	GND	N.C
24	GND	b_PERn2	24	GND	N.C
25	b_PETp3	GND	25	N.C	GND
26	b_PETn3	GND	26	N.C	GND
27	GND	b_PERp3	27	GND	N.C
28	GND	b_PERn3	28	GND	N.C

Mechanical Key					
29	REFCLK0+	GND	29	N.C	GND
30	REFCLK0-	GND	30	N.C	GND
31	GND	REFCLK1+	31	N.C	N.C
32	RSVD	REFCLK1-	32	N.C	N.C
33	REFCLK2+	GND	33	N.C	N.C
34	REFCLK2-	GND	34	N.C	GND
35	GND	REFCLK3+	35	N.C	GND
36	RSVD	REFCLK3-	36	GND	N.C
37	REFCLK4+	GND	37	GND	N.C
38	REFCLK4-	GND	38	N.C	GND
39	GND	N.C	39	N.C	GND
40	RSVD	N.C	40	GND	N.C
41	N.C	GND	41	GND	N.C
42	N.C	GND	42	+3.3V	+3.3V
43	GND	N.C	43	+3.3V	+3.3V
44	GND	N.C	44	+3.3V	+3.3V
45	a_PETp0	GND	45	+3.3V	+3.3V
46	a_PETn0	GND	46	+3.3V	+3.3V
47	GND	a_PERp0	47	+3.3V	+3.3V
48	GND	a_PERn0	48	+3.3V	+3.3V
49	a_PETp1	GND	49	+3.3V	+3.3V
50	a_PETn1	GND	50	+3.3V	+3.3V
51	GND	a_PERp1	51	GND	GND
52	GND	a_PERn1	52	GND	GND
53	a_PETp2	GND	53	GND	GND
54	a_PETn2	GND	54	GND	GND
55	GND	a_PERp2	55	GND	GND
56	GND	a_PERn2	56	GND	GND
57	a_PETp3	GND	57	GND	GND
58	a_PETn3	GND	58	GND	GND
59	GND	a_PERp3	59	+5V	+5V
60	GND	a_PERn3	60	+5V	+5V
61	a_PETp4	GND	61	+5V	+5V
62	a_PETn4	GND	62	+5V	+5V
63	GND	a_PERp4	63	GND	GND

Mechanical Key					
64	GND	a_PERn4	64	GND	GND
65	a_PETp5	GND	65	GND	GND
66	a_PETn5	GND	66	GND	GND
67	GND	a_PERp5	67	GND	GND
68	GND	a_PERn5	68	GND	GND
69	a_PETp6	GND	69	GND	GND
70	a_PETn6	GND	70	GND	GND
71	GND	a_PERp6	71	GND	GND
72	GND	a_PERn6	72	GND	GND
73	a_PETp7	GND	73	+12V	+12V
74	a_PETn7	GND	74	+12V	+12V
75	GND	a_PERp7	75	+12V	+12V
76	GND	a_PERn7	76	+12V	+12V
77	N.C	GND	77	+12V	+12V
78	+3.3V	+3.3V	78	+12V	+12V
79	+3.3V	+3.3V	79	+12V	+12V
80	+3.3V	+3.3V	80	+12V	+12V
81	+3.3V	+3.3V	81	+12V	+12V
82	RSVD	RSVD	82	+12V	+12V
X8 PCIe Connector B			X8 PCIe Connector D		
	Side B	Side A		Side B	Side A
1	+5Vaux	+5Vaux	1	INTB#	INTA#
2	GND	N.C	2	INTD#	INTC#
3	a_PETp8	GND	3	GND	N.C
4	a_PETn8	GND	4	REQ3#	GNT3#
5	GND	a_PERp8	5	REQ2#	GNT2#
6	GND	a_PERn8	6	PCI_RST#	GNT1#
7	a_PETp9	GND	7	REQ1#	GNT0#
8	a_PETn9	GND	8	REQ0#	SERR#
9	GND	a_PERp9	9	N.C	+3.3V
10	GND	a_PERn9	10	GND	N.C
11	N.C	GND	11	N.C	GND

Mechanical Key					
12	GND	N.C	12	CLKC	CLKD
13	a_PETp10	GND	13	GND	+3.3V
14	a_PETn10	GND	14	CLKA	CLKB
15	GND	a_PERp10	15	+3.3V	GND
16	GND	a_PERn10	16	AD31	GND
17	a_PETp11	GND	17	AD29	+3.3V
18	a_PETn11	GND	18	N.C	AD30
19	GND	a_PERp11	19	AD27	AD28
20	GND	a_PERn11	20	AD25	GND
21	a_PETp12	GND	21	GND	AD26
22	a_PETn12	GND	22	C/BE3#	AD24
23	GND	a_PERp12	23	AD23	+3.3V
24	GND	a_PERn12	24	GND	AD22
25	a_PETp13	GND	25	AD21	AD20
26	a_PETn13	GND	26	AD19	N.C
27	GND	a_PERp13	27	+5V	AD18
28	GND	a_PERn13	28	AD17	AD16
29	a_PETp14	GND	29	C/BE2#	GND
30	a_PETn14	GND	30	PCI_PRST#	FRAME#
31	GND	a_PERp14	31	IRDY#	TRDY#
32	GND	a_PERn14	32	DEVSEL#	+5V
33	a_PETp15	GND	33	LOCK#	STOP#
34	a_PETn15	GND	34	PERR#	GND
35	GND	a_PERp15	35	GND	C/BE1#
36	GND	a_PERn15	36	PAR	AD14
37	N.C	GND	37	N.C	GND
38	N.C	N.C	38	GND	AD12
39	GND	GND	39	AD15	AD10
40	GND	GND	40	AD13	GND
41	GND	GND	41	GND	AD09
42	GND	GND	42	AD11	C/BE0#
43	GND	GND	43	AD08	GND
44	+12V	+12V	44	GND	AD06
45	+12V	+12V	45	AD07	AD05
46	+12V	+12V	46	AD04	GND
Mechanical Key					

47	+12V	+12V	47	GND	AD02
48	+12V	+12V	48	AD03	AD01
49	+12V	+12V	49	AD00	GND

Note *Please contact your vendor to get the backplane design guide if it's required. The backplane design guide is NDA required.*